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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	09/662,958
Filing Date	09/15/2000
First Named Inventor	Ganesh Mani
Art Unit	3621
Examiner Name	John W. Hayes
Attorney Docket Number	284355-00003-1

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] After Allowance communication to Technology Center (TC)
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	David C. Jenkins Eckert Seamans Cherin & Mellott, LLC
Signature	
Date	January 4, 2005

CERTIFICATE OF TRANSMISSION/MAILING

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Typed or printed name	David C. Jenkins		
Signature		Date	January 4, 2005

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PTO/SB/17 (10-02)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2003

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 500.00

Complete if Known	
Application Number	09/662,958
Filing Date	09/15/2000
First Named Inventor	Ganesh Mani
Examiner Name	John W. Hayes
Art Unit	3621
Attorney Docket No.	284355-00003-1

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☑ Deposit Account:

Deposit Account Number: 02-2556

Deposit Account Name: Eckert Seamans

The Commissioner is authorized to: *(check all that apply)*

☑ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) during the pendency of this application

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	740	2001	370	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	510	2003	255	Plant filing fee	
1004	740	2004	370	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below	Fee Paid
Total Claims		-20** = 0	X	0	=
Independent Claims		- 3** = 0	X	0	=
Multiple Dependent					=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	84	2201	42	Independent claims in excess of 3
1203	280	2203	140	Multiple dependent claim, if not paid
1204	84	2204	42	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	400	2252	200	Extension for reply within second month	
1253	920	2253	460	Extension for reply within third month	
1254	1,440	2254	720	Extension for reply within fourth month	
1255	1,960	2255	980	Extension for reply within fifth month	
1401	320	2401	160	Notice of Appeal	
1402	320	2402	160	Filing a brief in support of an appeal	500
1403	280	2403	140	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,280	2453	640	Petition to revive - unintentional	
1501	1,280	2501	640	Utility issue fee (or reissue)	
1502	460	2502	230	Design issue fee	
1503	620	2503	310	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	740	2809	370	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	740	2810	370	For each additional invention to be examined (37 CFR 1.129(b))	
1801	740	2801	370	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 500.00

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	David C. Jenkins	*Registration No. (Attorney/Agent)*	42,831	*Telephone*	412/566-1253
Signature				*Date*	January 4, 2005

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Examiner: John W. Hayes	
Group Art Unit: 3621	METHODS AND SYSTEMS FOR ELECTRONIC AGENCY IN PERFORMANCE OF SERVICES
In re Application of: GANESH MANI	
Serial No. 09/662,958	
Filed: September 15, 2000	Attorney Docket No. 284355-00003-1

APPELLANT'S BRIEF ON APPEAL

January 4, 2005

Commissioner for Patents
MAIL STOP APPEAL BRIEF - PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an Appeal from the decision of the Examiner, dated September 17, 2004, rejecting Claims 1-70 and 90-93 of the above-identified application. The claims are set forth in Appendix 1, which is attached hereto. Due to the specific nature of the issues involved in this Appeal, an Oral Hearing is not deemed necessary and is not requested.

Real Party In Interest

The real party in interest is Ganesh Mani.

Related Appeals and Interferences

There are no other appeals or interferences known to Appellant or to Appellant's legal representative which will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

Status of the Claims

Claims 1-70 and 90-93 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Walker et al.* (U.S. Patent No. 5,862,223) in view of *Lloyd* (U.S. Patent No. 4,876,648).

Claims 71-89 have been canceled.

Status of the Amendments

There are currently no amendments to the pending claims. The claims as they stand on Appeal are contained in the Appendix 1 to this Brief.

Summary of the Claimed Subject Matter

The present invention provides a method for a principal to electronically locate an agent, give the agent a power of attorney, pay the agent, and for an agent to perform a service requested by a principal 114. *See* Fig. 1 and page 3, lines 13-15.

This invention further provides a computer implemented method for a principal to electronically establish and use an agent. The method includes the following steps: the principal identifying a service requirement 102, the principal submitting an electronic request for service 106, negotiating terms by principal and agent 108, establishing an electronic power of attorney, the agent performing said requested service 114, and, the principal paying said agent. *See* Fig. 1 and page 3, lines 17-22.

This invention further provides a computer readable medium containing instructions for performing a method for a principal to electronically establish and use an agent. The method includes the following steps: the principal identifying a service requirement 102, the principal submitting an electronic request for service 106, negotiating terms by principal and agent 108, establishing an electronic power of attorney, the agent performing said requested service 114, and, the principal paying said agent. *See* Fig. 1 and page 3, lines 24-30.

This invention further provides a computer system containing instructions for performing a method for a principal to electronically establish and use an agent. The method includes the following steps: the principal identifying a service requirement 102, the principal submitting an electronic request for service 106, negotiating terms by principal and agent 108, establishing an electronic power of attorney, the agent

performing said requested service 114, and, the principal paying said agent. *See* Fig. 1 and page 4, lines 1-6.

Grounds of Rejection to be Reviewed on Appeal

Claims 1-70 and 90-93 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Walker et al.* (U.S. Patent No. 5,862,223) in view of *Lloyd* (U.S. Patent No. 4,876,648).

Argument

Claims 1-70 and 90-93; Rejected under 35 U.S.C. § 103(a).

Claims 1-70 and 90-93 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Walker et al.* (U.S. Patent No. 5,862,223) in view of *Lloyd* (U.S. Patent No. 4,876,648). As previously noted by the Examiner, *Walker* does not disclose the use of an electronic power of attorney between a principal and an agent. Appellant further notes that *Walker* fails to even suggest such a power of attorney between a principal and an agent. The Examiner notes that *Lloyd* discloses a power of attorney in both the Abstract and at Col. 7, L. 64 – Col. 8, L. 6 and Col. 8 L. 16-28.

Initially, Appellant notes that the *Lloyd* Abstract reads in full:

> A computerized mortgage implementing system includes a central service computer, which helps establish and maintain mortgage plans based upon mortgages at least partially collateralized by investment vehicles. Both a plurality of groups of investment vehicle information and mortgage information are stored in the service computer. Borrower information is entered in the service computer when a mortgage plan is to be established. An individual one of the groups of investment information is selected. A desired amount of the investment funding is determined for helping repay a mortgage plan. Mortgage implementing information is generated for a given mortgage plan, and is sent to a mortgage lender computer to facilitate the establishment of the mortgage plan.

Thus, the Abstract fails to mention a power of attorney or any other type of agency relationship. Appellant further notes that the sentence describing how the notice in the sentence cited by the Examiner, states that, "Thirty days prior to the date, the program sends a notice of the option and then choices that are available to the

borrower **by registered mail**." *Lloyd* at Col. 7, L. 60-62 (Emphasis added). That is, *Lloyd* discloses the use of a traditional pen-and-paper power of attorney form. This non-electronic form is, apparently, converted to an electronic form so it may be included as an attachment to an electronic notice, Col. 8, L. 16-28, but the power of attorney is not established as an electronic document. Thus, *Lloyd* fails to disclose an "electronic power of attorney" as asserted by the Examiner.

Moreover, as stated in, *In re Geiger*, 815 F.2d 686, 2 U.S.P.Q.2d 1276 (Fed. Cir. 1987), "obviousness cannot be established by combining teachings of the prior art to produce the claimed invention, *absent some teaching, suggestion, or incentive* supporting combination" (emphasis added) (attached as Appendix 2). Put another way, "the mere fact that disclosures or teachings of the prior art can be retrospectively combined for the purpose of evaluating obviousness/nonobviousness issue does not make the combination set forth in the invention obvious, unless the art also suggested the desirability of the combination ...." *Rite-Hite Corp. v Kelly Co.*, 629 F.Supp. 1042, 231 U.S.P.Q. 161, (attached as Appendix 3) aff'd 819 F.2d 1120, 2 U.S.P.Q.2d 1915 (E.D. Wis. 1986) (emphasis added). Similarly, the court in, *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991), stated that "both the suggestion [to make the claimed apparatus] and the reasonable expectation of success must be found in the prior art, not in the Appellants' disclosure" (attached as Appendix 4). Here, there is no suggestion that the cited references should be combined.

Accordingly, neither *Walker* nor *Lloyd* disclose the use of an electronic power of attorney as claimed in the present application. Moreover, even if one of the references did disclose the use of an electronic power of attorney, there is no "*teaching, suggestion, or incentive*" supporting a combination of the references as relied upon by the Examiner. As such, the rejection of claims 1, 33, and 52 under 35 U.S.C. §103(a) as being unpatentable over *Walker et al.* in view of *Lloyd* should be reversed. Claims 1, 33, and 52 are all of the independent claims of the present application. The remaining claims rely on their dependency for patentability as well as the fact that, for the reasons identified above, the references cannot be combined to be used as the basis for rejecting each of the dependent claims under 35 U.S.C. §103(a).

Conclusion

It is submitted that Claims 1-70 and 90-93 are patentable over the prior art. Therefore, it is requested that the Board reverse the Examiner's rejections of Claims 1-70 and 90-93 and remand the application to the Examiner for the issuance of a Notice of Allowance.

Respectfully submitted,

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APPENDIX 1

1. A computer implemented method for a principal to electronically establish and use an agent, said method comprising the steps of:

(a) said principal identifying a service requirement;

(b) said principal submitting an electronic request for service;

(c) negotiating terms by principal and agent;

(d) establishing an electronic power of attorney; and

(e) using an electronic device to verify said agent is performing said requested service. .

2. The method of claim 1, wherein said step of submitting a request for service includes the steps of:

(a) identifying the service requested;

(b) providing a database having information relating to available agents; and

(c) connecting an agent able to perform said requested service with said principal.

3. The method of claim 2, wherein said submitting a request for service further includes the steps of:

(a) said principal identifying terms and conditions relating to the performance of said requested service; and

(b) transmitting said terms and conditions to available agents.

4. The method of claim 3, wherein said negotiating step includes the steps of:

(a) establishing constraints on the performance of said agent.

5. The method of claim 4, wherein said constraint is a soft constraint.

6. The method of claim 4, wherein said constraint is a hard constraint.

7. The method of claim 4, wherein said step of establishing an electronic power of attorney includes the steps of:

(a) generating a power of attorney document; and

(b) electronically signing said power of attorney document.

8. The method of claim 7, wherein said step of establishing an electronic power of attorney further includes the steps of:

(a) electronically verifying said electronic signature; and

(b) providing an electronic key that allows said agent to access selected information about said principal electronically.

9. The method of claim 8, wherein said electronic verification is performed by an asymmetric cryptosystem.

10. The method of claim 8, wherein said electronic verification is performed by a biometric method.

11. The method of claim 8, wherein said selected information about said principal is stored in an information database and said step of agent performing said requested service includes the steps of:

(a) said agent accessing said principal information database;

(b) said agent interacting with third parties to perform said requested service; and

(c) said agent reporting completion of said requested service to said principal.

12. The method of claim 11, wherein said third parties can electronically verify the status of said agent.

13. The method of claim 11, wherein said step of using an electronic device to verify said agent is performing said requested service includes the steps of:

(a) said agent updating said information database with a status report; and

(b) said principal accessing said information database.

14. The method of claim 11, wherein said step of using an electronic device to verify said agency is performing said requested service includes the steps of:

(a) said agent generating a status report; and

(b) said agent delivering said report to said principal.

15. The method of claim 11, wherein said step of using an electronic device to verify said agent is performing said requested service includes the step of:

(a) said principal terminating said power of attorney.

16. The method of claim 11, wherein said step of using an electronic device to verify said agent is performing said requested service includes the step of:

(a) terminating said power of attorney upon said agent violating said terms and conditions or said constraints.

17. The method of claim 91, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) said principal paying a web site provider for an allotment of agent time;

(b) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(c) said web site provider paying said agent for said requested service.

18. The method of claim 91, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) paying said agent a fixed fee;

(b) said principal paying a web site provider for an allotment of agent time; and

(c) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(d) said web site provider paying said agent for said requested service.

19. The method of claim 91, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) paying said agent an hourly basis;

(b) said principal paying a web site provider for an allotment of agent time;

(c) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(d) said web site provider paying said agent for said requested service.

20. The method of claim 1, wherein said step of establishing an electronic power of attorney includes the steps of:

(a) generating a power of attorney document; and

(b) electronically signing said power of attorney document.

21. The method of claim 20, wherein said step of establishing an electronic power of attorney further includes the steps of:

(a) electronically verifying said electronic signature; and

(b) providing an electronic key that allows said agent to access selected information about said principal electronically.

22. The method of claim 21, wherein said electronic verification is performed by an asymmetric cryptosystem.

23. The method of claim 21, wherein said electronic verification is performed by a biometric method.

24. The method of claim 1, wherein said selected information about said principal is stored in an information database and said step of agent performing said requested service includes the steps of:

(a) said agent accessing said principal information database;

(b) said agent interacting with third parties to perform said requested service; and

(c) said agent reporting completion of said requested service to said principal.

25. The method of claim 24, wherein said third parties can electronically verify the status of said agent.

26. The method of claim 24, wherein said step of using an electronic device to verify said agent is performing said requested service includes the steps of:

(a) said agent updating said information database with a status report; and

(b) said principal accessing said information database.

27. The method of claim 24, wherein said step of using an electronic device to verify said agent is performing said requested service includes the steps of:

(a) said agent generating a status report; and

(b) said agent delivering said report to said principal.

28. The method of claim 24, wherein said step of using an electronic device to verify said agent is performing said requested service includes the step of:

(a) said principal terminating said power of attorney.

29. The method of claim 24, wherein said step of using an electronic device to verify said agent is performing said requested service includes the step of:

(a) terminating said power of attorney upon said agent violating said terms and conditions or said constraints.

30. The method of claim 90, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) said principal paying a web site provider for an allotment of agent time;

(b) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(c) said web site provider paying said agent for said requested service.

31. The method of claim 90, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) paying said agent a fixed fee;

(b) said principal paying a web site provider for an allotment of agent time; and

(c) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(d) said web site provider paying said agent for said requested service.

32. The method of claim 90, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) paying said agent an hourly basis;

(b) said principal paying a web site provider for an allotment of agent time;

(c) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(d) said web site provider paying said agent for said requested service.

33. A computer readable medium containing instructions for performing a method for a principal to electronically establish and use an agent, said method comprising the steps of:

(a) said principal identifying a service requirement;

(b) said principal submitting an electronic request for service;

(c) negotiating terms by principal and agent;

(d) establishing an electronic power of attorney;

(e) using an electronic device to verify said agent is performing said requested service.

34. The computer readable medium of claim 33, wherein said step of submitting a request for service includes the steps of:

(a) identifying the service requested;

(b) providing a database having information relating to available agents; and

(c) connecting an agent able to perform said requested service with said principal.

35. The computer readable medium of claim 34, wherein said submitting a request for service further includes the steps of:

(a) said principal identifying terms and conditions relating to the performance of said requested service; and

(b) transmitting said terms and conditions to available agents.

36. The computer readable medium of claim 35, wherein said negotiating step includes the steps of:

(a) establishing constraints on the performance of said agent.

37. The computer readable medium of claim 36, wherein said constraint is a soft constraint.

38. The computer readable medium of claim 36, wherein said constraint is a hard constraint.

39. The computer readable medium of claim 33, wherein said step of establishing an electronic power of attorney includes the steps of:

(a) generating a power of attorney document; and

(b) electronically signing said power of attorney document.

40. The computer readable medium of claim 39, wherein said step of establishing an electronic power of attorney further includes the steps of:

(a) electronically verifying said electronic signature; and

(b) providing an electronic key that allows said agent to access selected information about said principal electronically.

41. The computer readable medium of claim 40, wherein said electronic verification is performed by an asymmetric cryptosystem.

42. The computer readable medium of claim 40, wherein said electronic verification is performed by a biometric method.

43. The computer readable medium of claim 33, wherein said selected information about said principal is stored in an information database and said step of agent performing said requested service includes the steps of:

(a) said agent accessing said principal information database;

(b) said agent interacting with third parties to perform said requested service; and

(c) said agent reporting completion of said requested service to said principal.

44. The computer readable medium of claim 43, wherein said third parties can electronically verify the status of said agent.

45. The computer readable medium of claim 43, wherein said step of using an electronic device to verify said agent is performing said requested service includes the steps of:

(a) said agent updating said information database with a status report; and

(b) said principal accessing said information database.

46. The computer readable medium of claim 43, wherein said step of using an electronic device to verify said agent is performing said requested service includes the steps of:

(a) said agent generating a status report; and

(b) said agent delivering said report to said principal.

47. The computer readable medium of claim 43, wherein said step of using an electronic device to verify said agent is performing said requested service includes the step of:

(a) said principal terminating said power of attorney.

48. The computer readable medium of claim 43, wherein said step of using an electronic device to verify said agent is performing said requested service includes the step of:

(a) terminating said power of attorney upon said agent violating said terms and conditions or said constraints.

49. The computer readable medium of claim 92 , wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) said principal paying a web site provider for an allotment of agent time;

(b) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(c) said web site provider paying said agent for said requested service.

50. The computer readable medium of claim 92, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) paying said agent a fixed fee;

(b) said principal paying a web site provider for an allotment of agent time; and

(c) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(d) said web site provider paying said agent for said requested service.

51. The computer readable medium of claim 92, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) paying said agent an hourly basis;

(b) said principal paying a web site provider for an allotment of agent time;

(c) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(d) said web site provider paying said agent for said requested service.

52. A computer system having a computer readable medium containing instructions for performing a method for a principal to electronically establish and use an agent, said method comprising the steps of:

(a) said principal identifying a service requirement;

(b) said principal submitting an electronic request for service;

(c) negotiating terms by principal and agent;

(d) establishing an electronic power of attorney;

(e) using an electronic device to verify said agent is performing said requested service.

53. The computer system of claim 52, wherein said step of submitting a request for service includes the steps of:

(a) identifying the service requested;

(b) providing a database having information relating to available agents; and

(c) connecting an agent able to perform said requested service with said principal.

54. The computer system of claim 53, wherein said submitting a request for service further includes the steps of:

(a) said principal identifying terms and conditions relating to the performance of said requested service; and

(b) transmitting said terms and conditions to available agents.

55. The computer system of claim 54, wherein said negotiating step includes the steps of:

(a) establishing constraints on the performance of said agent.

56. The computer system of claim 55, wherein said constraint is a soft constraint.

57. The computer system of claim 55, wherein said constraint is a hard constraint.

58. The computer system of claim 52, wherein said step of establishing an electronic power of attorney includes the steps of:

(a) generating a power of attorney document; and

(b) electronically signing said power of attorney document.

59. The computer system of claim 58, wherein said step of establishing an electronic power of attorney further includes the steps of:

(a) electronically verifying said electronic signature; and

(b) providing an electronic key that allows said agent to access selected information about said principal electronically.

60. The computer system of claim 59, wherein said electronic verification is performed by an asymmetric cryptosystem.

61. The computer system of claim 59, wherein said electronic verification is performed by a biometric method.

62. The computer system of claim 52, wherein said selected information about said principal is stored in an information database and said step of agent performing said requested service includes the steps of:

(a) said agent accessing said principal information database;

(b) said agent interacting with third parties to perform said requested service; and

(c) said agent reporting completion of said requested service to said principal.

63. The computer system of claim 62, wherein said third parties can electronically verify the status of said agent.

64. The computer system of claim 62, wherein said step of using an electronic device to verify said agent is performing said requested service includes the steps of:

(a) said agent updating said information database with a status report; and

(b) said principal accessing said information database.

65. The computer system of claim 62, wherein said step of using an electronic device to verify said agent is performing said requested service includes the steps of:

(a) said agent generating a status report; and

(b) said agent delivering said report to said principal.

66. The computer system of claim 62, wherein said step of using an electronic device to verify said agent is performing said requested service includes the step of:

(a) said principal terminating said power of attorney.

67. The computer system of claim 62, wherein said step of using an electronic device to verify said agent is performing said requested service includes the step of:

(a) terminating said power of attorney upon said agent violating said terms and conditions or said constraints.

68. The computer system of claim 93, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) said principal paying a web site provider for an allotment of agent time;

(b) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(c) said web site provider paying said agent for said requested service.

69. The computer system of claim 93, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) paying said agent a fixed fee;

(b) said principal paying a web site provider for an allotment of agent time; and

(c) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(d) said web site provider paying said agent for said requested service.

70. The computer system of claim 93, wherein said step of said principal using an electronic device to pay said agent includes the steps of:

(a) paying said agent an hourly basis;

(b) said principal paying a web site provider for an allotment of agent time;

(c) deducting the time said agent spent on said step of said agent performing said requested service from said time bank; and

(d) said web site provider paying said agent for said requested service.

71.-88. (Canceled)

90. The method of claim 1 including the further step of said principal using an electronic device to pay said agent.

91. The method of claim 11 including the further step of said principal using an electronic device to pay said agent.

92. The computer readable medium of claim 33 including the further step of said principal using an electronic device to pay said agent.

93. The computer system of claim 52 including the further step of said principal using an electronic device to pay said agent.

firm agency determination, if at all, on ground that agency gave for decision). On remand, the Board must determine (1) whether the positions sought by the petitioners were temporary, and if so (2) whether the petitioners were nonetheless entitled to compete for these positions since they involved functions that were transferred to the new agency.

If the Board should conclude that these three petitioners were entitled to those positions in place of the persons to whom the positions were assigned, the Board then will have to determine the relative priority of entitlement among petitioners Acerno, Anderson, and Watson to the two positions involved. Only two of these petitioners could have been entitled to the two positions all three of them are seeking. *Cf. Former CSA Employees*, 762 F.2d at 984.

CONCLUSION

The Board decisions sustaining the separation of Mr. Pizzi, Ms. Hudgins, and Ms. Pilgrim are affirmed. The Board decisions sustaining the separations of Mr. Acerno, Ms. Anderson, and Ms. Watson are reversed, and the cases of those petitioners are remanded to the Board to determine (1) whether the two positions these former employees seek were temporary and, if they were, (2) whether the petitioners nevertheless are entitled to these positions because they are "transition" positions.

AFFIRMED IN PART, REVERSED IN PART, AND REMANDED.

In re Gary E. GEIGER.*

Appeal No. 86-1103.

United States Court of Appeals, Federal Circuit.

April 1, 1987.

Applicant appealed decision of Patent and Trademark Office Board of Patent Appeals and Interferences, which affirmed examiner's rejection of claims, on basis of obviousness, relating to method of inhibiting scale formation on and corrosion of metallic parts in cooling water systems. The Court of Appeals, Archer, Circuit Judge, held that prima facie case of obviousness was not established.

Reversed.

Pauline Newman, Circuit Judge, concurred and filed opinion.

1. Patents ⇐113(6)

Standard of review for conclusion of obviousness is correctness or error as a matter of law. 35 U.S.C.A. § 103.

2. Patents ⇐16.5

Obviousness cannot be established by combining teachings of prior art to produce claimed invention, absent some teaching, suggestion, or incentive supporting combination. 35 U.S.C.A. § 103.

3. Patents ⇐16.25

Prima facie case of obviousness was not established with respect to method of inhibiting scale formation on and corrosion of metallic parts in cooling water systems by use of compositions containing sulfonated styrene/maleic anhydride copolymer, water soluble zinc compound, and organo-phosphorus acid compound or water soluble salt thereof; disclosures in prior art referenced in instant patent application may have made it obvious to one skilled in art to try various combinations of known scale and corrosion prevention agents disclosed, but were insufficient to establish obviousness, in absence of some suggestion in prior art supporting combination which resulted in instant method. 35 U.S.C.A. § 103.

Bruce E. Peacock, Betz Laboratories, Inc., Trevose, Pa., argued, for appellant.

Robert D. Edmonds, Associate Sol., Office of the Sol., Arlington, Va., argued, for appellee. With him on the brief, were Joseph F. Nakamura, Sol. and Fred E. McKelvey, Deputy Sol.

Before NEWMAN, Circuit Judge, SKELTON, Senior Circuit Judge, and ARCHER, Circuit Judge.

ARCHER, Circuit Judge.

This is an appeal from a decision of the United States Patent and Trademark Office (PTO) Board of Patent Appeals and Interferences (board), Appeal No. 606-09, affirming the examiner's rejection of all remaining claims, 43-63 and 65-67, in appellant's patent application, Serial Number 373,903 ('903), under 35 U.S.C. § 103. We reverse.

OPINION

Background

The '903 application, filed on May 3, 1982, is directed to a method of inhibiting scale formation on and corrosion of metallic parts in cooling water systems by use of compositions containing (1) a sulfonated styrene/maleic anhydride (SSMA) copolymer, (2) a water soluble zinc compound, and (3) an organo-phosphorus acid compound or water soluble salt thereof.

In its decision dated February 7, 1986, the board affirmed the examiner's rejections under 35 U.S.C. § 103, finding that the claimed subject matter would have been obvious in view of various combinations of references, but with reliance primarily upon U.S. Patent No. 4,209,398 issued to Ii, et al. (Ii), U.S. Patent No. 4,374,733 issued to Snyder, et al. (Snyder '733) and U.S. Patent No. 4,255,259 issued to Hwa, et al. (Hwa).[1]

The Ii patent discloses use in cooling water systems of scale and corrosion prevention compositions comprised of a polymeric component in combination with one or more compounds selected from the group consisting of inorganic phosphoric acids and water soluble salts thereof, phosphonic acids and water soluble salts thereof, organic phosphoric acid esters and water soluble salts thereof, and polyvalent metal salts. Although the Ii polymeric component may contain maleic acid and styrene monomers, there is no disclosure of the specific copolymer, SSMA, required in applicant's claims.

The Snyder '733 patent discloses a method for treating cooling water systems prone to scale formation by the addition of a composition comprised of an acrylic acid/lower alkyl/hydroxy acrylate copolymer and another polymeric component, which may be SSMA or a styrene/maleic anhydride (SMA) copolymer. The Snyder '733 patent notes that boiler and cooling water systems share a common problem in regard to scale deposit formation and that use of SMA to prevent scale in boiler water systems is known.

The Hwa patent is directed to a method for treating boiler water systems that are prone to scale formation by addition of a composition comprised of SSMA and an organo-phosphorus acid compound.

The remaining references, cited with respect to certain dependent claims, contain no suggestion to use SSMA, the specific copolymer recited in the appealed claims.

Based upon the prior art and the fact that each of the three components of the composition used in the claimed method is conventionally employed in the art for treating cooling water systems, the board held that it would have been prima facie obvious, within the meaning of 35 U.S.C. § 103, to employ these components in combination for their known functions and to optimize the amount of each additive. The board further held that data appearing in

* This opinion issued as an unpublished opinion on December 11, 1986. On request of counsel for appellant, it is now being reissued as a published opinion.

1. Hwa was cited only with respect to dependent claims 47 and 49.

appellant's specification, and supplemented by a declaration submitted pursuant to 37 C.F.R. § 1.132, provided insufficient evidence of nonobviousness to rebut the prima facie case.

Issues

1. Whether the board erred in finding that a prima facie case of obviousness was established.

2. Assuming that a prima facie case of obviousness was established, whether the board erred in finding that appellant's objective evidence with regard to unexpected results was insufficient to rebut that prima facie case.

Analysis

[1] Obviousness is a question of law based upon the factual inquiries mandated in *Graham v. John Deere Co.*, 383 U.S. 1, 86 S.Ct. 684, 15 L.Ed.2d 545, 148 USPQ 459 (1966). *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 447, 230 USPQ 416, 419 (Fed.Cir.1986). For a conclusion of obviousness, the standard of review is correctness or error as a matter of law. *In re Caveney*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed.Cir.1985); *In re De-Blauwe*, 736 F.2d 699, 703, 222 USPQ 191, 195 (Fed.Cir.1984).

Appellant contends that the PTO failed to establish a prima facie case of obviousness and, consequently, that the board's affirmance of the examiner's rejections was erroneous. Appellant argues that the PTO's position represented hindsight reconstruction or, at best, established that it would have been "obvious to try" various combinations of known scale and corrosion prevention agents, including the combination recited in the appealed claims.

[2, 3] We agree with appellant that the PTO has failed to establish a prima facie case of obviousness. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed.Cir.1984). We are convinced that the latter are not present here.

Ii does not suggest use of SSMA as its claimed polymeric component and does not require the presence of an organo-phosphorus acid compound or of a zinc compound. Ii notes that it is difficult to maintain a predetermined concentration of polyvalent metal ions, such as the zinc (II) ion, in alkaline cooling water, but states that its claimed polymeric component prevents the "polyvalent metals from becoming insoluble compounds and precipitating...." Although Snyder '733 discloses use of SSMA, it is for the purpose of showing that it, or one of three other specifically recited copolymers, may be used in combination with yet another polymeric component, an acrylic acid/lower alkyl/hydroxy acrylate copolymer, to prevent scale formation. With respect to claims 47 and 49, Hwa does disclose the specifically-recited organo-phosphorus acid compound. It provides, however, no suggestion to add a zinc compound to its disclosed combination of SSMA and organo-phosphorus acid compounds, or to use SSMA in combination with an organo-phosphorus acid compound in the treatment of a cooling water system, where the characteristics may significantly differ from those in Hwa's boiler water system. Hwa also provides no suggestion that SSMA could prevent precipitation of the zinc (II) ion in alkaline cooling water in the manner ascribed to the polymeric component of Ii.

At best, in view of these disclosures, one skilled in the art might find it obvious to try various combinations of these known scale and corrosion prevention agents. However, this is not the standard of 35 U.S.C. § 103. *In re Goodwin*, 576 F.2d 375, 377, 198 USPQ 1, 3 (CCPA 1978); *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); *In re Tomlinson*, 363 F.2d 928, 150 USPQ 623 (CCPA 1966).

Because we reverse on the basis of failure to establish a *prima facie* case of obviousness, we need not reach the issue of the sufficiency of the showing of unexpected results.

REVERSED.

PAULINE NEWMAN, Circuit Judge, concurring.

I agree in the court's result, but respectfully do not share the view that the PTO did not present a prima facie case that the claimed invention would have been obvious in terms of 35 U.S.C. § 103. I write separately because the determination of whether a prima facie case of obviousness has been made is a critical decision that controls the evidentiary procedures and burdens before the PTO.

The claims are directed to a three-component system to control scale and corrosion in cooling water systems, the components being (1) zinc ions, (2) a copolymer of sulfonated styrene and maleic anhydride (SSMA), and (3) an organo-phosphorus acid or salt. A three-part system is described in the Ii reference for the same purpose, but differs from applicant's system in that the copolymer component (2) is different. There is no teaching of SSMA in the Ii reference. However, the Snyder '733 reference teaches SSMA in combination with other polymers to control scale in cooling water systems. The use of SSMA in cooperation with phosphonate is known to reduce scale and sludge in boilers (Hwa). Hwa does not use zinc ions, and it is known that zinc ions produce undesirable results in boilers, but the Ii reference states that it was known to use zinc ions alone or in combination with organo-phophorus acids or salts to inhibit corrosion in cooling water.

Thus each of Geiger's three components has been described, separately or in partial combination, for use in cooling water systems. In my view, it would have been prima facie obvious to replace the polymer component of Ii with the known scale inhibitor SSMA, or to add an organophosphorus compound and zinc ions, both known corrosion inhibitors, to SSMA to achieve both scale and corrosion resistance in cooling water systems. *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980); *Minnesota Mining & Manufacturing Co. v. Ansul Co.*, 213 USPQ 1024, 1033–34 (E.D.Wis.1981). The Board so held.

The applicant, in rebuttal of the PTO's prima facie case, argued that his three-component system exhibits superior properties, and that the superiority was not obvious in view of the cited references. In support of this argument the applicant relied on experimental data in the specification.

The specification contains data on the corrosion/scale control capability of various combinations of components, including data comparing the applicant's three-part system containing SSMA with other three-part systems containing other preferred scale-preventing polymers of the prior art. These data showed significant superiority of applicant's system; this was not disputed. The Board nevertheless held that the prima facie case was not rebutted because the applicant did not include data showing the properties of SSMA alone, stating that "the superior performance of such compositions may be due to the superiority of SSMA vis-a-vis the other scale-preventing copolymers."

I agree with the Board to the extent that it would have been of scientific interest to include such data. However, as a matter of law I believe that the applicant's showing was reasonable and sufficient. He complied with the requirement that the comparative showing "must be sufficient to permit a conclusion respecting the relative effectiveness of applicant's claimed compounds and the compounds of the closest prior art," *In re Payne*, 606 F.2d 303, 316, 203 USPQ 245, 256 (CCPA 1979), and must "provide an adequate basis to support a legal conclusion of unobviousness." *In re Johnson*, 747 F.2d 1456, 1461, 223 USPQ 1260, 1264 (Fed.Cir.1984). The applicant demonstrated the exceptional corrosion inhibition achieved with his three-part system in comparison with systems containing the known corrosion inhibitors zinc ion and organophosphorus compounds. He also compared his combination with systems containing other known polymeric scale inhibitors such as those taught by Ii, and demonstrated that those systems did not provide the improvement in corrosion and scale control achieved with the SSMA combination. He also demonstrated that neither polyma-

leic anhydride nor sulfonated polystyrene had the same effect on corrosion resistance as did the SSMA copolymer.

Applicant compared his system with the most relevant prior art. It is not required that the claimed invention be compared with subject matter that does not exist in the prior art. The applicant is not required to create prior art, nor to prove that his invention would have been obvious if the prior art were different than it actually was.

The Board also upheld the examiner's additional rejection that it would have been obvious to add zinc ion to the two-component SSMA/phosphonate system of Hwa. The Hwa system is for the reduction of scale and sludge at the high temperatures of steam boilers, and it was uncontroverted that zinc ion is not usable at high temperatures. Applicant provided data showing that the Hwa system is relatively ineffective in a cooling system. The Board did not contradict this position on its scientific merits.

The applicant compared SSMA/phosphonate (Hwa) alone, SSMA/zinc, and phosphonate/zinc, with his three-component system, and achieved results that the Board held showed "superior performance." These results are sufficient in themselves to rebut a prima facie case of obviousness. *See In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed.Cir. 1984).

Turning to the rejection on the breadth of the claim language, the limitations in the claims appear to be reasonably commensurate with the disclosure. Although I do not agree with the applicant that it is incumbent on the Commissioner to offer "technical evidence", applicant's specific examples are illustrative of the limitations described in the specification, and are not in themselves further limitations. *In re Johnson*, 558 F.2d 1008, 1017, 194 USPQ 187, 195 (CCPA 1977); *In re Goffe*, 542 F.2d 564, 567, 191 USPQ 429, 431 (CCPA 1976).

UNITED STATES COURT OF APPEALS

First Circuit

DECISIONS WITHOUT PUBLISHED OPINIONS

Title	Docket Number	Date	Disposition	Appeal from and Citation (if reported)
Wells Real Estate, Inc., In re	86-2145	1/5/87	DENIED	D.Mass.
Lopez Cruzado v. Secretary of Health and Human Services	86-1357	1/7/87	VACATED AND REMANDED	D.P.R.
White v. Town of Gilford	86-1844	1/7/87	DISMISSED AND REMANDED	D.N.H.
Filardi v. Zamora	86-1471	1/8/87	AFFIRMED	D.P.R.
U.S. v. Baronow	86-1779	1/8/87	AFFIRMED	D.Me.
U.S. v. Myatt	86-1780	1/8/87	AFFIRMED	D.Me.
U.S. v. Bellino	86-1781	1/8/87	AFFIRMED	D.Me.
U.S. v. Campos	86-1699	1/9/87	AFFIRMED	D.R.I.
Amelunxen v. University of Puerto Rico	86-1533	1/20/87	AFFIRMED	D.P.R., 637 F.Supp. 426
Correra v. Anderson	86-1714	1/22/87	AFFIRMED	D.Mass.
U.S. v. Landau	86-1800	1/23/87	AFFIRMED	D.N.H.
Khan v. I.N.S.	86-1518	1/29/87	GRANTED; VACATED AND REMANDED	I.N.S.
International Ladies' Garment Workers' Union v. Bali Co.	86-2065	1/29/87	DISMISSED	D.P.R., 649 F.Supp. 1083
Fallon, In re	86-1159	2/3/87	AFFIRMED	D.Me.
U.S., In re	87-1003	2/4/87	DENIED	D.N.H.
Woloohojian Realty Corp. v. Delvicario	86-1797	2/10/87	AFFIRMED	D.R.I.
Sheet Metal & Air Conditioning Contractors Ass'n of Bldg. Trade Employees Ass'n v. Sheet Metal Workers Intern. Ass'n, Local Union 17	86-1579	2/12/87	DISMISSED	D.Mass., 619 F.Supp. 1073
Cavanaugh v. U.S.	86-1845	2/13/87	AFFIRMED	D.Mass.
Robbins v. City of Auburn, Me.	86-1830	2/18/87	DENIED; DENIED; AFFIRMED	D.Me.
Font, In re	87-1001	2/25/87	DISMISSED	D.P.R.
Collins v. Ex-Cell-O Corp. Co.	86-1315	3/4/87	AFFIRMED	D.Mass., 629 F.Supp. 540
Cruz v. Secretary of Health and Human Services	86-1879	3/4/87	AFFIRMED	D.P.R.
Levasseur, In re	87-1138	3/6/87	DENIED	D.Mass.
Charles v. West Indies Transport	86-1427	3/10/87	AFFIRMED	D.P.R., 631 F.Supp. 1023

tend equal employment opportunity related human resource development training classes as soon as practicable and shall notify this Court of compliance by filing certificate of completion, signed by the individual or organization providing such training for each employee attending. The general manager shall raise affirmatively the subject of racial harassment and discrimination with all of his employees and inform all employees that racial harassment and discrimination violates Title VII of the Civil Rights Act of 1964, the Florida Human Relations Act, and the policy of defendant itself. Moreover, a copy of this order shall be posted conspicuously in Defendant's workplace in locations where notices to employees are customarily posted for a period of sixty (60) days. Any employee seeking a copy of this Order shall be provided with one.

Further, the defendant shall institute a grievance procedure in accordance with its own policy manual which shall be designed to swiftly and effectively assure that racial harassment is eradicated. This grievance procedure shall be written in consultation with counsel for plaintiff and provided to all employees. It shall establish a system whereby harassed employees may complain to the general manager immediately and confidentially. The general manager shall be required by this grievance procedure to promptly take all necessary steps to investigate and correct any harassment or discrimination, including warnings and appropriate discipline directed at the offending party. Further, defendant shall seek to generally develop other means of preventing harassment in its work place. *See Bundy*, at 947.

The Court retains jurisdiction to monitor this injunction, upon proper motion, to assure that no discrimination occurs in the future.

[14] The plaintiff shall be entitled to all costs of this action and to reasonable attorneys' fees. The Court retains jurisdiction to award reasonable attorneys' fees and costs.

RITE-HITE CORPORATION, Acme Dock Specialists, Inc., Allied Equipment Corp., Anderson Material Handling Co., Applied Handling, Inc., C & L Equipment Corporation, W.E. Carlson Corporation, R.B. Curlin, Inc., Equipment Systems, Inc., Great Northern Industrial Prod., Inc., HOJ Engineering & Sales Co., Inc., Indy Equipment Company, Inc., Johnson Equipment Co., Keller Equipment Co., Inc., King Industrial Equipment, Inc., Loading Dock Equipment Co., Inc., McCormick Equipment Company, Inc., Metro Dock Specialists, Inc., Mid-Atlantic Handling Systems, Inc., Niehaus Industrial Sales, Inc., Northway Material Handling Co., Inc., Rice Equipment Co., Stokes Equipment Company, Inc., Timbers & Associates, Inc., Todd Equipment Corporation, U.S. Materials Handling Corp., John L & Associates, Inc., and Stordox Equipment Co., Plaintiffs,

v.

KELLEY COMPANY, INC., Defendant.

Civ. A. No. 83-C-434.

United States District Court, E.D. Wisconsin.

March 5, 1986.

Action was brought for patent infringement. The District Court, Reynolds, Chief Judge, held that: (1) asserted claims for patent, involving restraining device used to hold truck in place while being loaded or unloaded from a loading dock, was valid and infringed, but (2) stay of injunction pending appeal would expire within 30 days of filing date of decision and order unless notice of appeal was filed within that period.

Order in accordance with opinion.

See also, 99 F.R.D. 332.

1. Patents ⇐16.1

Failure to consider claimed invention "as a whole" in determining obviousness is an error of law. 35 U.S.C.A. § 103.

2. Patents ⇐16.5

Factors to be considered in determining level of "ordinary skill in the art," when considering obviousness of an invention, may include educational level of one of ordinary skill, types of problems encountered in the art, prior art solution to those problems, rapidity with which innovations are made, and sophistication of the technology; not all of such factors need be considered in every case, and one or more factors may predominate or be given more weight in a particular case. 35 U.S.C.A. § 103.

3. Patents ⇐16.5

Mere fact that disclosures or teachings of prior art can be retrospectively combined for purposes of evaluating obviousness/nonobviousness issue does not make the combination set forth in the invention obvious, unless the art also suggested desirability of the combination, inventor's beneficial results, or advantage to be derived from combining the teachings. 35 U.S.C.A. § 103.

4. Patents ⇐36.1(3, 4, 5), 36.2(1)

Objective evidence of nonobviousness of an invention includes whether patented invention fulfills long-felt need in industry to which it applied, whether others tried and failed to meet the need which the invention ultimately satisfied, whether the patented invention met with substantial success upon its introduction to the market, and whether the accused infringer recognized that the invention was truly meritorious. 35 U.S.C.A. § 103.

5. Patents ⇐36.1(5)

In determining nonobviousness of patented invention, imitation of invention by alleged infringer is strong evidence of what alleged infringer thinks of the patent in suit and is persuasive of what the rest of the world ought to think. 35 U.S.C.A. § 103.

6. Patents ⇐72(1)

To assert that a patent claim is anticipated under 35 U.S.C.A. § 102, a party must demonstrate identity of invention.

7. Patents ⇐314(5)

Determination that a claimed invention is "anticipated" under 35 U.S.C.A. § 102 is a factual determination.

8. Patents ⇐72(1)

Party which seeks finding that patent claim was anticipated must show that each and every element of patent claim is found, as arranged in the claim, either expressly or implicitly described under appropriate principles of inherency, in single prior art reference, or that claimed invention was previously known or embodied in single prior art reference, or that claimed invention was previously known or embodied in single prior art device or practice. 35 U.S.C.A. § 102.

9. Patents ⇐312(1)

Burden of patent owner in proving infringement by a preponderance of the evidence extends to infringement under the doctrine of equivalents as well as to literal infringement. 35 U.S.C.A. § 271(a).

10. Patents ⇐226

Issue of infringement of a patent raises at least two questions: what is patented, and has what is patented been made, used, or sold by another. 35 U.S.C.A. § 271(a).

11. Patents ⇐226.6

In patent infringement action, patent claims measure invention and define boundaries of patent protection. 35 U.S.C.A. § 271(a).

12. Patents ⇐226.6

If allegedly infringing product falls literally within patent claim when words are given their proper meaning, infringement of patent is made out, and that is the end of the inquiry. 35 U.S.C.A. §§ 112, 271(a).

13. Patents ⇐226.6

Question of patent infringement is resolved by comparing accused device with claims of the patent, not with the structure described in the patent or the patentee's commercial device. 35 U.S.C.A. §§ 112, 271(a).

14. Patents ⇐167(1)

Claims of a patent are to be construed in light of the specification, and both are to be read with a view to ascertaining the invention. 35 U.S.C.A. § 112.

15. Patents ⇐165(1)

Each patent claim must be considered as defining a separate invention.

16. Patents ⇐165(3)

Patentee's claim covers all combinations which utilize as the stated means the structure described in the specification for performing the stated function and also all combinations that utilize any structure which is the equivalent of that described structure insofar as it performs the stated function. 35 U.S.C.A. § 112.

17. Patents ⇐165(1)

In construing a "means plus function" claim, a number of factors may be considered: language of claim, patent specification, prosecution history of patent, other claims in patent, and expert testimony; once such factors are weighed, scope of the "means" claim may be determined. 35 U.S.C.A. § 112.

18. Patents ⇐314(5)

Issue as to whether a device is an equivalent of the described embodiment of the patent claim in issue is a question of fact. 35 U.S.C.A. § 112.

19. Patents ⇐234, 239, 240

Alleged infringer cannot escape infringement by mere fact that its invention is more or less efficient than subject matter claimed by patent owner or performs additional functions or adds features or is an improvement. 35 U.S.C.A. § 112.

20. Patents ⇐226.6

Narrow patent claim limitations cannot be read into broader claims to avoid infringement. 35 U.S.C.A. § 112.

21. Patents ⇐165(2)

Claims of a patent are the measure of the protected invention. 35 U.S.C.A. § 112.

22. Patents ⇐237

"Doctrine of equivalents" adds latitude and breadth to application of patent claim language to prevent infringer from perpetrating a fraud on the patent; the doctrine is designed to protect a patentee from an infringer who appropriates the invention even if the infringer avoids the literal language of the claim. 35 U.S.C.A. § 112.

See publication Words and Phrases for other judicial constructions and definitions.

23. Patents ⇐172

Range of equivalents to which a patent claim is entitled is on a sliding scale depending on the nature of the invention. 35 U.S.C.A. § 112.

24. Patents ⇐173

When patented invention has had significant commercial success or is of the pioneer type, patent claims are to be construed liberally and are not to be limited to identical means and mode of operation shown in the patent. 35 U.S.C.A. § 112.

25. Patents ⇐173, 174

Broad protection is given not only to so-called pioneer patents, but patents that make substantial contribution to existing art and patents that consist of combination of old ingredients that produce new and useful results. 35 U.S.C.A. § 112.

26. Patents ⇐172

Claims of a patent are entitled to a range of equivalents commensurate with the scope of the invention. 35 U.S.C.A. § 112.

27. Patents ⇐237

Mere use by alleged infringer of component that may be more sophisticated than that disclosed in specific embodiment of patent does not allow alleged infringer to escape appropriate range of equivalents and thereby avoid infringement of the claimed invention. 35 U.S.C.A. § 112.

28. Patents ⇐319(4)

In addition to other relief recoverable for infringement of its patent, patentee should recover prejudgment interest under 35 U.S.C.A. § 284 in order to prevent infringer from having benefit of use of money which it would have been paying in royalties.

29. Patents ⇐16.14, 235(2)

Claims 1, 2, 3, 8, 12, and 13 of patent involving restraining device used to hold a truck in place while being loaded or unloaded from a loading dock were valid and infringed.

30. Federal Courts ⇐685

Even though notice of appeal had not yet been filed, district court had authority to grant stay of injunction pending appeal conditioned on movant's filing of notice of appeal within a specified period. Fed. Rules Civ.Proc.Rule 62(c), 28 U.S.C.A.

31. Federal Courts ⇐685

District court may in its discretion suspend final judgment granting injunction if party seeking suspension of judgment pending appeal can show that it is likely to prevail on merits on appeal, it will suffer irreparable injury unless stay is granted, stay would not substantially harm other parties to the litigation, and stay is in the public interest. Fed.Rules Civ.Proc.Rule 62(c), 28 U.S.C.A.

32. Federal Courts ⇐685

Showing of absolute probability of success on the merits on appeal need not be made in order to obtain stay of injunction pending appeal if injunction would destroy status quo, irreparably harming appellant, and grant of stay would cause only slight harm to appellee. Fed.Rules Civ.Proc.Rule 62(c), 28 U.S.C.A.

33. Federal Courts ⇐685
Patents ⇐324.1

Stay pending appeal, without bond, of injunction enjoining competitor from infringing patent would expire within 30 days of filing date of decision and order granting the injunction unless notice of appeal was filed within that period. Fed. Rules Civ.Proc.Rule 62(c), 28 U.S.C.A.

Theodore W. Anderson, Arthur W. Olson, Jr., Lawrence E. Apolzon & Roger H. Stein, Neuman, Williams, Anderson & Olson, Chicago, Ill. and Gilbert W. Church, Foley & Lardner, Milwaukee, Wis., for plaintiffs.

Glenn O. Starke, Andrus, Sceales, Starke & Sawall, and Matthew J. Flynn, Quarles & Brady, Milwaukee, Wis., for defendant.

DECISION AND ORDER

REYNOLDS, Chief Judge.

This is an action in patent infringement and unfair competition. Federal jurisdiction derives from 28 U.S.C. § 1338. The plaintiffs Rite-Hite Corporation ("Rite-Hite") and its independent representatives seek a judgment that a truck restraining device manufactured and distributed by defendant Kelley Company, Inc. ("Kelley") infringes a patent owned by Rite-Hite, and that Kelley has competed unfairly by its use of a promotional film. Kelley has counterclaimed, alleging that Rite-Hite's patent is obvious in view of the prior art and is therefore void, and that Rite-Hite has competed unfairly.

The parties have agreed that the issues of liability and damages be tried separately. Rite-Hite also applied for preliminary injunctive relief with respect to its claim of unfair competition respecting Kelley's promotional film, and Kelley was enjoined from further use of unexpurgated versions of the film by the Court's order of March 16, 1984. Kelley was subject to this order at the time the issues of liability on the patent claims and Kelley's claims of unfair competition were tried to the Court.

The foregoing claims were tried to the Court between May 20 and May 29, 1985. At the close of the proceedings, I stated:

> I am persuaded that the evidence compels a decision that the patent is valid. It was not obvious. And I am sorry that I have to find that the patent was infringed.
>
> I do not believe the infringement was willful. I think that the Kelley people, in the spirit of good competition, Rite-Hite came out with a product, and they wanted to meet the product and they did the

best they could and certainly did not intend to infringe on that patent, but I think the evidence compels me to find that they did.

As far as the unfair competition issues involved, the use of the injunctive powers of the federal court I think should be used very sparingly. I don't think there is any irreparable injury on either side as far as this advertising. The film has not been used for a couple years, or at least since we had the hearing on preliminary injunction. I see no reason for the Court in the exercise of its discretion and injunctive powers to be issuing—equity powers, issuing any more injunctions for either side.

The plaintiffs were then directed to file proposed findings of fact and conclusions of law, with a period of time allotted to defendant to comment thereon. The plaintiffs have filed their submission, the defendant has objected to certain provisions, and the plaintiffs have responded to the objections. Kelley has also moved for a stay of the injunction pending appeal, and Rite-Hite opposed this motion. I am persuaded that certain of the objections should be sustained, but that others would direct an outcome favoring the defendant and are not supported by the evidence. What follows, therefore, are essentially the findings of fact and conclusions of law proposed by plaintiffs with exceptions where a defense objection has been sustained by the Court in view of the evidence presented at trial.

I. FINDINGS OF FACT

A. *Parties and Jurisdiction*

1. Plaintiff Rite-Hite is a Wisconsin corporation having its principal place of business at Milwaukee, Wisconsin. The other plaintiffs are Rite-Hite's independent and exclusive sales representatives throughout the country.

2. Defendant Kelley is also a Wisconsin corporation with its principal place of business at Milwaukee, Wisconsin.

3. Rite-Hite and Kelley, together, are dominant factors in the dock leveler industry and have been keen competitors since Rite-Hite was founded in 1965.

4. This is an action for patent infringement arising under the patent laws of the United States, Title 35 U.S.C. The court has jurisdiction under 28 U.S.C. § 1338(a), and venue lies in this district under 28 U.S.C. § 1400(b).

5. There are also claims and counterclaims for unfair competition arising under the statutory and common laws of the State of Wisconsin. The court has jurisdiction under 28 U.S.C. § 1338(b).

B. *History of the Case*

6. This action was initiated in early 1983, shortly after the patent-in-suit issued. Rite-Hite charged Kelley with infringement of U.S. Patent 4,373,847 (the '847 patent), as well as with unfair competition. On a preliminary injunction motion, the unfair competition count was heard by this Court on February 27 and 28, 1984. A decision was rendered in favor of Rite-Hite on March 16, 1984, granting a preliminary injunction enjoining use of a motion picture film which appeared to characterize unfairly Rite-Hite's Dok-Lok product.

7. Rite-Hite subsequently filed a motion for intervention on behalf of certain independent and exclusive Rite-Hite sales representatives, and the motion was granted. A trial was held before the Court in this action from May 20 through May 29, 1985. The main issues were (1) whether or not the defendant Kelley has infringed the '847 patent owned by the plaintiff Rite-Hite, and under which the other plaintiffs—Acme Dock Specialists, Inc., et al.—have certain exclusive territorial rights, and (2) whether Kelley could carry its burden that the '847 patent is invalid. The remaining issues relate to unfair competition and are mentioned further below.

C. *Rite-Hite's Background*

8. Dock levelers, or automatic dockboards, are devices that automatically or semi-automatically bridge the gap between a truck and a dock so that forklift trucks

can safely pass over that gap during the loading and unloading process. Dock levelers, in general, have replaced the loose plates that were often used when loading and unloading was done manually.

9. For years, dock leveler users and manufacturers as well as regulatory agencies recognized that a safety hazard existed because of the way that large trucks and trailers, for a variety of reasons, inadvertently separated from the dock during the loading or unloading process. If this happens a forklift can fall through the gap between the truck and dock onto the driveway below, and the results for the forklift truck and its operator can be catastrophic.

10. For instance, the forklift truck will almost always drop to the pavement if, when the truck pulls away, the forklift is parked in a position where it is supported in part by the dockboard and in part by the truck. In this situation, there is nothing at all to keep the forklift and its operator from falling through the gap between the truck and the dock.

11. The forklift truck will also be exposed to this type of accident if it is moving either into or out of the truck or trailer at the time the truck separates from the dock. In such situations, the driver may not notice the gap and drive the forklift off the truck bed, especially if he is backing up out of the truck. Another hazard exists from sudden accelerations and decelerations of a loaded forklift inside a truck. In this situation, a considerable force tending to push the truck away from the dock can produce disaster. This phenomenon is sometimes referred to by Kelley and Rite-Hite as "trailer creep."

12. Aware of these life-threatening problems, but lacking a real solution in the late 1960's and early 1970's, Rite-Hite provided its only answer at that time, its Total Dock Safety (T.D.S.) Package (PTX-3) [1], which included wheel chocks, a large warning sign, and a "Dock Safety Rules" sign. But these were not an adequate remedy for the problem. Kelley worked on a somewhat similar and equally ineffective "communication" system.

13. In yet another situation, the forklift driver can suffer severe or fatal injuries even if, when the truck inadvertently separates from the dock, the forklift is parked in a stationary position on the dockboard and is fully supported by the dockboard. This is because, in normal operation, the outward or free end of the dockboard rests on the bed of the truck. When the vehicle pulls away, the end of the dockboard lip that was supported by the truck tends to drop. This, in turn, tends to tip the whole dockboard downwards and pitch the forklift, its operator, and/or its load onto the driveway.

14. To eliminate this latter hazard, dock leveler manufacturers many years ago designed safety devices into their dock levelers to limit the extent to which the dockboard could tip downwards in the event of the inadvertent separation of the truck from the dock. Kelley developed its "Panic Stop," which was patented in the middle 1960's (DTX-183-8). This device had a ratchet that was engaged to prevent the outward end of the dockboard from moving downward if the dockboard started to move down abnormally fast. This prevented the further downward progress of the board. Rite-Hite also developed its patented "Safety Legs" in the early 1970's which, when not needed, could be pulled away, but when in normal operation, limited the extent to which the dockboard would descend in this situation. Neither of these devices provided a complete solution to the problem, but they clearly recognized the very real hazard and need. In its 1966 patent (DTX-183-8), Kelley acknowledged that dock accidents could result in death and added that the problem of accidental dropping of the ramp "has been a thorn in the side of mechanical dockboards for as long as such boards have been made" (DTX-183-8, col. 2, lines 40-43).

1. References to plaintiffs' trial exhibits will be identified as "PTX ____" and defendant's trial exhibits as "DTX ____."

15. The question of whether the dockboard safety devices described above could be sold as "options" or whether they should always be made mandatory features on all dock levelers was the subject of disputes between dock equipment manufacturers. Rite-Hite sold its devices as standard equipment. Kelley's devices were sold as options.

16. A meeting of American National Standards Institute (ANSI) Safety Committee MH14 was held in October 1975 to consider, among other things, this question of whether "safety legs" on dock levelers should be options or standard. During the course of this meeting, Rite-Hite's founder and representative at the meeting, Arthur K. White, became convinced that these safety stop devices then being offered were an approach to only part of the problem. He concluded that what was really needed was something to restrain the vehicle physically so that it could never move away from the dock inadvertently. No effective device was offered on the market at that time. Wheel chocks were ineffective. Warning and "communication" systems were likewise ineffective.

D. *The Development of Vehicle Restraints at Rite-Hite*

17. The '847 patent claims one of a series of basic inventions that Rite-Hite made during a product development program that lasted for a number of years. After Rite-Hite introduced its commercial Dok-Lok vehicle restraints, the rest of the industry, including Kelley, were skeptics or copyists.

18. Rite-Hite's development program was long and arduous. Rite-Hite's first vehicle restraint, which was developed by 1977 but never marketed, involved a mechanism mounted on a driveway in front of a loading dock. The "engaging mechanism" was disposed at an angle relative to the driveway and engaged a part of the truck. Another device developed shortly thereafter consisted of a pipe clamp type of latch which held a flexible steel cable and industrial hook that could be attached to any holes or crevices in the trailer to hold it in place (PTX-16). The next effort involved a flexible cable and hydraulic holding device (PTX-124). Both of these devices were mounted on the dock platform. These devices all performed the same function that they were designed to perform, i.e., they prevented the truck from inadvertently separating from the dock. Rite-Hite filed a patent application in October of 1977 for the Hydraulic Securing Device (flexible cable) that ultimately issued as U.S. Patent 4,146,888 on March 27, 1979 (PTX-1b). A physical example of this device was demonstrated at the trial (PTX-16).

19. But these early vehicle restraints had drawbacks. They were relatively expensive, and they were relatively difficult to use. They were also obtrusive and vulnerable to damage because of their location either on the driveway, where they could be hit by trucks or snowplows, or on the top surface of the loading dock, where they could obstruct traffic or be vulnerable to forklift trucks moving about the dock.

20. By the spring of 1978, Rite-Hite had developed a vehicle restraint mounted on the vertical face of the dock where it was less of an obstruction and less likely to be damaged. This device included a "pivoted hook" member. The hook had a shank pivoted to the wall and a right angle hook to engage a vehicle. The hook member, when not used, was stored in a downwardly rotated position with the shank pendent along the wall. As the pivoted hook members refined over several generations, the hook was operable either manually (by a driver standing on the driveway) or automatically (with the power of an activated dock leveler). When used, it was pivoted upwardly to an operative mode to engage the truck via the truck's ICC bar. This device represented a major advance in the art of vehicle restraints. Accordingly, Rite-Hite filed a patent application which issued as U.S. Patent 4,208,161 (PTX-1d). Physical exhibits of these devices were also demonstrated at the trial (PTX-17 and PTX-18).

21. But these devices with a pivoted hook also had drawbacks. The main drawback was the fact that they were limited in terms of the variations in ICC bars that could be accommodated. ICC bars are bars that the Interstate Commerce Commission requires on most trucks to prevent low automobiles from running underneath them in the event of rear-end collisions. To learn about the variations in ICC bars, Rite-Hite conducted surveys of thousands of trailers and obtained data from trailer manufacturers. These surveys indicated that ICC bars were present on all over-the-road trailers and also provided Rite-Hite with extensive knowledge about the differences that existed between the various ICC bars in terms of shape and height from the ground. Rite-Hite found that the ICC bar height varied as much as 15 inches from the legal maximum of 30 inches above the ground, and this variation presented serious problems for Rite-Hite's early pre-1978 inventive efforts. The surveys also showed that "over-the-road" trailers had a suspension "float" of 2 inches to 2½ inches. Float was accommodated in one of the earlier generations (PTX-18) by permitting the hook to rotate against the resistance of a spring.

22. By late 1978, an adjustable trapezoidal carriage was developed and added, and the pivoted hook was then mounted in the carriage. The carriage was biased upward with springs stored in the dock leveler to hold the carriage with the enclosed hook above the ground when it was not in operation. The carriage was actuated by movement of the ICC bar so that the carriage moved down against the springs as the truck backed into the dock. The downward movement of the carriage positioned the hook so that it was always in a good position to be activated and pivoted up to engage the ICC bar. With this device, Rite-Hite found it could accommodate the vast bulk of the ICC bars which its research had indicated would be encountered. The carriage also accommodated "float." This device was another substantial advancement in the art of restraining trucks, and Rite-Hite filed a patent application resulting in U.S. Patent 4,282,621 (the '621 patent) (PTX-6h). A physical exhibit of this device was demonstrated at trial (PTX-19).

23. In 1979, Rite-Hite developed some improvements which further refined this "pivoted hook" restraint. Among other things, the springs are incorporated into opposite sides of the trapezoidal carriage along which the carriage slides so that the restraint can operate independently of any dock leveler, and rotation of the hook was motorized. It is this version of a restraint with a pivoted hook that was ultimately commercialized in the spring of 1980 as the Model ADL-100 Dok-Lok vehicle restraint. U.S. Patent 4,264,259 (the '259 Patent) (PTX-6j), disclosing and claiming this device, issued on April 28, 1981. This device was also demonstrated at trial (PTX-131).

E. *U.S. Patent 4,373,847*

24. Rite-Hite's development program continued after the introduction of the Model ADL-100. One of the program's objectives was cost reduction and simplification. In order to achieve that objective, a vehicle restraint that was simple, more rugged and inexpensive, and that could be manually operated, if desired, was sought.

25. In the spring of 1981, about a year after the introduction of the ADL-100, Steven Hipp and Norbert Hahn developed the first of Rite-Hite's MDL vehicle restraints. This is the system of the '847 patent and the Kelley Truk Stop. The '847 patent is entitled RELEASABLE LOCKING DEVICE, was filed in the U.S. Patent and Trademark Office on May 4, 1981, and issued on February 15, 1983.

26. The '847 patent is directed to a new approach to a vehicle locking device or vehicle restraint for securing a parked vehicle to an adjacent stationary upright structure such as a dockwall. The device of the '847 patent has a frame vertically extending up the dockwall and secured to the exposed surface of the wall. It has a hook assembly that has a follower mounted in the frame for vertical movement between an upper operative position, where it will se-

cure the vehicle against the wall, and a lower inoperative position free of the vehicle so that the vehicle can be driven away from the wall. The hook assembly has a horizontal shank portion extending outwardly from the follower and a vertical hook portion. The device of the '847 patent further has a retaining means to retain the hook in its upper operative position but to selectively permit the hook to be released to its lower inoperative position.

27. In addition to the above-described basic structure, the device of the '847 patent includes a slide as a part of the fixed wall-mounted frame, which is urged upwardly by a biasing force and has a first part of the retaining means secured to it. A coacting complimental second part of the retaining means is carried by the hook and engages the first part to prevent accidental movement of the hook from an operative to an inoperative position. Thereby, any loading of the vehicle, such as upon the entry of a forklift truck, will cause the hook, the slide, and the two parts of the retaining means to move together downwardly against the biasing force of the spring to provide downward float. This is a desirable feature, for without it, the device could become "jammed" by the weight of the truck pushing down on the hook assembly engaged with the ICC bar. This downward float is made possible by heavy duty springs which hold the slide so that the slide and the first part of the retaining means are upwardly biased even when not restraining a vehicle. As a result, the retaining means and the hook element can move, as a unit, several inches vertically downward when subjected to the forces of a truck being loaded.

28. While, in the preferred embodiment described in the '847 patent, the first part of the retaining means is a ratchet and the second part is a pawl, the description in column 2 starting at line 2 makes it very clear that the patent is not limited to this particular embodiment. At column 3, line 5, the description makes it clear that other equivalent devices, and in particular elongated vertically extending devices, could be employed instead of a ratchet. At column 4, lines 9–10, the description makes it equally clear that other equivalent devices could be substituted for the pawl. From the testimony of both experts, the Patent Office prosecution history, and the other evidence, it is clear that the rack and pinion of Kelly and the threaded shaft of the Taylor, et al., reference, cited by the Examiner, are the equivalent of the ratchet and pawl shown in the particular embodiment described in the '847 patent.

29. Recognizing the advancement in the art of vehicle restraints represented by the MDL Dock-Lok, Rite-Hite sought and obtained the '847 patent disclosing and claiming this system. A physical MDL truck restraint constructed in accordance with the described embodiment of the '847 patent (PTX–20) was demonstrated at trial and was also compared to the Model MDL–55 (PTX–123) and the Kelley Truk Stop (PTX–21) systems. The claimed elements in Claims 1, 2, 3, 8, 12, and 13 of the '847 patent are found in the MDL, the MDL–55, and the Kelley Truk Stop. Mr. Kjell Erlandsson, who is Kelley's Vice President of Engineering and who testified as an expert witness for Kelley at trial, questioned whether the word "releasably" was apt in finding that the Kelley rack and pinion releasably retained the hook in its operative position. The term is apt as indicated by the use of the term "Release" on the Truck Stop control box for the purpose of lowering the hook to release it from engagement with a vehicle.

30. The value of the invention of the model MDL and '847 patent is not limited to simplicity of construction or the possibility of manual operation. The vertically traveling hook assembly is a new departure from and an improvement over previous "pivoted hook" designs in part because the capture area available to engage an ICC bar by the hook was changed to a rectangular area from the smaller semi-circular area provided by the pivoting hook, resulting in a better range of engagement. Also, the vertically travelling hook assembly has a smaller sweep or clearance area moving into the operating position to reduce the chance of interference with things other than the ICC bar. In addition, the pivoting hook has a tendency to rotate away, whereas there is no such concern with the vertically moving hook assembly. Mr. Erlandsson made these observations at his deposition and continued to acknowledge these advantages at the trial. In addition, the Model MDL can be used either with or without a power source.

F. *The '847 Patent Was Commercialized As the MDL–55*

31. Rite-Hite had successfully tested production prototypes, was completing production drawings and obtaining quotes on large production quantities of parts when Messrs. Hip, Hahn, and Swessel in mid-1981 came up with an improved version, the MDL–55. Although the basic device shown in the '847 patent had downward float, this unit did not have what people in the industry today call "upward" float, i.e., the hook is not initially springbiased up against the ICC bar. At the trial, the evidence established that normal "over-the-road" trucks deflect between about 1 inch and 2½ inches, so that in most situations, the vertical hook portion of the hook assembly shown in the '847 patent would accommodate the upward float of the ICC bars. The vertical hook portion of the hook assembly could also, of course, have been made longer to provide additional compensation for the "upward float" of the ICC bar.

32. With the improvement of the MDL–55, if the ICC bar rises as weight is taken off the truck, an initial bias is provided that can raise the vertically movable hook. This increased the versatility of the vertically moving hook. The improved restraint handles not only "over-the-road" trailers but "city" trucks (a small percentage of the vehicles to be restrained), which generally have weaker springs and, thus, deflect more than the "over-the-road" trailers. This improved MDL device, the Model MDL–55 vehicle restraint, is disclosed and claimed in U.S. Patent 4,443,150 (PTX–1i). This model was also demonstrated at the trial (PTX–123).

33. Kelley did not dispute that this improved model MDL–55 device uses the '847 patent and has been commercialized by Rite-Hite and is a current successful product of Rite-Hite. Over 1,800 of the MDL–55's have been sold, generating sales in the millions of dollars.

34. Similarly, the Kelley Truk Stop uses the '847 patent, but by using a motor and rack and pinion instead of the ratchet and pawl of the specific embodiment of the '847 patent, Kelley obtains the same advantages as the MDL–55's initial upward float. Kelley's Truk-Stop is additional evidence of the commercial success of the invention of the '847 patent. While one can never be certain of the precise causal relationship of commercial success, nevertheless in this case, it appears from all of the evidence that the invention of the '847 patent was a very significant factor.

G. *Kelley's Development of Its "Truk Stop" Device*

35. The facts established at trial indicate that Kelley learned about and made its vertically moving hook through its examination and adoption of the Rite-Hite MDL–55 device and the related literature.

36. Kelley's imitation of the vertically moving hook and the other elements of the '847 patent is indicative of the value, the importance, and the unobviousness of the invention claimed in the '847 patent. Furthermore, the fact that Kelley has procured U.S. Patent 4,488,325 (DTX–212), on aspects of its vehicle restraint, does not negate the infringement of Rite-Hite's '847 patent. The very foundation of the patent system contemplates that users of a basic patent will make improvements with time. Both Kelley and Rite-Hite did so here, but if anything, that enhances the dignity of the '847 patent.

37. Kelley's first knowledge of a workable vehicle restraint came with the introduction of the ADL–100 Dok-Lok sold by Rite-Hite in April of 1980. In June of 1980, Kelley's response to this first device of

Rite-Hite was to propose various communications devices (PTX-64). One year later, in June of 1981, Kelley was still working on communications-type devices (PTX-65).

38. In the late summer of 1981, about the time of the introduction of Rite-Hite's Model MDL-55, the Occupational Safety and Health Administration ("OSHA") issued an instruction (PTX-30), the purpose of which was to allow the use of vehicle restraints without wheel chocks.

39. At about this same time, Kelley's sales representatives began expressing increased concerns to Kelley (which was still without a vehicle restraint in its product line) that sales of Rite-Hite's vehicle restraints could be coupled with sales of Rite-Hite dock levelers which would otherwise be sold by Kelley (PTX-36). This was a double injury in the market place. As a result, the representatives found that their ability to sell dock equipment was hampered by the presence of Rite-Hite vehicle restraints.

40. Kelley had no plans for a physical restraint at the time of the OSHA instruction. Rather, Kelley's focus was still on communication. Knowing of the long-standing problem, Kelley had failed to recognize the solution.

41. On Friday, November 13, 1981, John Hogseth (Kelley's Vice President of Marketing) sent a memo to Joseph Driear (Kelley's Director of Engineering) formally requesting Mr. Driear to begin work immediately on a vehicle restraint to compete against the Rite-Hite Dok-Lok and to cost less than $1,000 (PTX-32). During the course of this program, Kelley personnel referred to its vehicle restraint as "Kelley's version of the Dok-Lok" (PTX-36).

42. On the following Monday, November 16, 1981, Hogseth's memo (PTX-32) was marked "received" by "Engineering," and a memo at the bottom in Mr. Driear's handwriting of the same date indicates that Mr. Driear would comply with Mr. Hogseth's requests but that the following were initially required:

(a) Engineering needed a copy of the OSHA regulations that sanction the use of vehicle restraints (this was done four days later as noted below);

(b) The formal "request" for the product development program should be submitted (there is evidence that this was, apparently, never done);

(c) A copy of the "complete" Rite-Hite literature should be sent to Engineering (the operating instruction sheet for the MDL-55 had been received by Engineering on September 17, 1981, as an attachment to a memorandum from Hogseth (PTX-31), but other literature, such as an ADL-100 booklet, was not provided until later); and

(d) A sample of the Rite-Hite product should be made available to Engineering (this was done on December 30, 1981, as described below).

43. On the next day, Mr. Driear carefully reviewed copies of certain Rite-Hite patents, including the patent claiming the Model ADL-100 restraint (with a pivoting hook), and made notes regarding the claims of the patents (PTX-33). His notes all portray, among other things, the "pivoted hook" configuration shown in the Rite-Hite patents.

44. About that time, Kelley's patent attorney, Glenn Starke, visited Mr. Driear, and they discussed the Rite-Hite patents. Although the Model MDL-55 devices were marked "patent pending" (PTX-93), no search or study was made or opinion given on what patents might issue on the MDL-55.

45. Also, at about this time, the vehicle restraint development project of Kelley was assigned the project number "915" and was assigned to David Bennett, a young engineer working under Mr. Driear's supervision. Mr. Bennett is now deceased. Kelley continued to work on communications-type systems (PTX-65).

46. A date stamp on the OSHA instruction indicates that it was received by Kelley's engineering department on Friday, November 20, 1981 (PTX-30).

47. On December 29, 1981, Mr. Bennett wrote a memo in longhand setting forth the "work schedule" for the "trailer anchoring device" (PTX-38). The memo sets forth a number of tasks which indicate that little, if any, progress had been made in the design work up to this point, and a high priority had been given to obtaining additional information on Rite-Hite's product. A memo and monthly report dated January 14, 1982, from Mr. Driear to Mr. Kuhns (PTX-58), also generally summarizes the work done on project 915 during December of 1981 as follows: "Conceptual work on truck/trailer anchoring device proceeded slowly due to higher priority projects." Thus, at the end of 1981, Kelley was still without a defined concept or significant development of vehicle restraint to compete with Rite-Hite.

48. On December 30, 1981, the previously ordered Model MDL-55 Dok-Lok vehicle restraint was finally installed at Kelley's Tuf-Seal subsidiary (PTX-129). An hour after the installer left, the Kelley engineers, including Mr. Driear, began inspecting, disassembling, measuring, operating, and photographing it. Polaroid photographs of the device were taken then and later placed on file in Kelley's engineering division (PTX-22 through PTX-29). These photographs, discussed at trial, show Mr. Driear at the site of the installation (PTX-26), the disassembled vehicle restraint as well as with a tape measure (PTX-24 and PTX-29) next to certain parts. One of these photographs shows the serial number tag on the device (PTX-26). At that time these tags indicated that patents were pending on the device (PTX-93).

49. Messrs. Bennett and Driear knew, or had available to them as of the end of December 1981, everything that was possible for them to know about the construction of the Rite-Hite Model MDL-55. They knew the fact that it had a vertical support, a channel in the support for a slide, a hook mounted for vertical movement in the support, and a ratchet and pawl assembly that operates by relative movement to position the hook on the slide, retain it in the position, and permit downward float of the slide, hook, and retaining means as a unit against a biasing force.

50. On the next day, Robert Kuhns sent a memo (PTX-55) to Mr. Driear and a copy of a publication draft of a Model ADL Service Bulletin that Kelley had obtained on May 5, 1980, stating:

> With this (I think George Zahorik has the original) and the Tuf-Seal Mechanical [MDL Dok-Lok], we should be able to move.

51. By January 12, 1982, the first sketches that have been found of Kelley's device, which embodied all of the features of Rite-Hite's device described above and claimed in the '847 patent claims 1, 2, 3, 8, 12, and 13, were complete. These first sketches show the product that was eventually commercialized as the Truk Stop.

52. At the trial, Kelley claimed that these January sketches were not the earliest sketches and that they had previous sketches and work. However, Kelley was unable to produce any earlier sketches showing a device similar in any way to its Truk Stop, notwithstanding numerous requests made by Rite-Hite's counsel before and during the trial. In fact, on January 15, 1982 (PTX-57), these sketches were signed and witnessed by Kuhns and Driear. Furthermore, the evidence established at trial indicates that Kelley's practice is to have the first description or sketch of an invention witnessed so as to corroborate the date and provide credible evidence of the date of the invention. Thus, based upon this evidence, the earliest sketches of the Truk Stop device were not made by Kelley's engineers until about two weeks after Kelley's same engineers viewed, operated, and disassembled Rite-Hite's MDL-55.

53. By February 23, 1982, the first prototype of Kelley's Truk Stop restraint was complete, operating, and ready for testing. Photographs of this prototype (PTX-43) were taken by Kelley specifically for the purpose of establishing this date.

54. On March 1, 1982, the design of the Truk Stop product was released at a "show and tell" demonstration, and by about July 1, 1982, the product was available for intro-

duction to the representatives and production, shortly after the date projected by Kelley in the fall of 1981 (PTX-32).

55. The evidence at trial, both through the testimony of Kelley's personnel and its documentation, shows that Kelley had given a great deal of thought to the question of a product that would compete with Rite-Hite's vehicle restraint, and that Kelley had made little progress in its own efforts to come up with a competing device until after its engineers had the benefit of the MDL-55 Dok-Lok brochures and inspected, tested, and dismantled an actual MDL-55.

56. The testimony at trial of Robert Engleking, a Kelley sales representative in Minneapolis in 1981 and 1982, was uncontroverted. That evidence showed the commercial impact of the Rite-Hite Dok-Lok restraints, the need for such device, and the response of Kelley. Mr. Kuhns, President of Kelley, during a private showing of the new Truk Stop in the spring of 1982, demonstrated it side by side with Rite-Hite MDL-55 and explained the relationship between them to Mr. Engleking.

H. *Kelley Has Failed to Prove That the '847 Patent Is Invalid*

57. Kelley has asserted invalidity of the claims in suit of the '847 patent, stating that the claimed combination is obvious and shown in the prior art. The Court finds that Kelley has failed to carry forth its burden that the patent is invalid and holds that the claims in suit are not invalid.

a. *The Claimed Invention Is Nonobvious*

58. Kelley has alleged that the asserted claims are obvious over the prior art. On this issue the Court has (1) determined the scope and content of the prior art, (2) ascertained the difference between the prior art and subject matter claim, (3) determined the level of ordinary skill in the art, and (4) given consideration to the objective evidence of nonobviousness such as long-felt need, commercial success, failure of others, copying, and unexpected results. Based upon the evidence coupled with an analysis of this indicia, the Court finds that the subject matter of claims 1, 2, 3, 8, 12 and 13 are nonobvious.

59. Kelley set forth a number of prior art references during the trial. Many of these references were before the Examiner and some of them were not. With respect to the references not before the Examiner, the Court finds that none of these are more pertinent than the art before the Examiner. Along these lines, the Court rejects Mr. Erlandsson's testimony that U.S. Patent 4,282,621 (PTX-1-g), which issued to Anthony, et al., for a Releaseable Locking Device and which was not before the Examiner, is more pertinent than U.S. Patent 4,264,259 (PTX-1-e), issued to Mr. Hipp for a Releaseable Locking Device; U.S. Patent 4,267,748 (PTX-1f), issued to Grunewald, et al., for a Releasable Locking Mechanism; and U.S. Patent 4,208,161 (PTX-1d), issued to Mr. Hipp, et al., for Device For Releasably Securing A Vehicle To An Adjacent Support, all of which were cited by the Examiner. All of these patents, discussed earlier, resulted from the Rite-Hite vehicle restraint program. The '621 patent teaches no more than the '259, '748, or '161 patents, which were before the Examiner.

60. The plethora of references set forth by Kelley in general fall into two categories. The first category contains ratchet and pawl references shown in a montage (DTX-202). The reliance on these references is based upon Kelley's misapprehension of the claims as being specific to a ratchet and pawl as an element of the claimed combination. None of the claims is limited to a ratchet and pawl, and Rite-Hite never contended it had invented a ratchet and pawl. Kelley put in no evidence that any of the ratchet and pawl references suggested use of that element in the claimed combination to secure a parked vehicle against a stationary upright structure such as a dock wall. Thus, none of the prior art items in DTX-202 is of significance in the issue of obviousness.

61. The second category of prior art is that shown in DTX-201. These references all relate to some type of vehicle restraint,

but none shows the claimed combination of the '847 patent. The closest references to the asserted '847 patent claims are the work of Rite-Hite's development team. None of those references suggest going to the system of the '847 claims with a horizontal hook shank mounted to a follower to a vertical support or with a biased slide and retaining means for the vertically movable hook. Nor do those references suggest a slide, a vertically movable hook in the slide and retaining means to support the hook fixed in the slide, all vertically movable as a unit to provide float.

62. The examiner had the best of these references before him; that is, Rite-Hite's '259, '161, and '748 patents showing pivotally mounted hooks on a vertical wall. The Examiner was correct in finding the '847 claims unobvious and patentable thereover. While each single element of the claims may have precedent in the prior art, as is true in most mechanical patents, the combination of elements set forth in the claims of the '847 patent asserted here was novel. It proved a workable, efficient, and inexpensive solution to a very long-felt need in the dock equipment industry and was not suggested in any reference. Kelley was well aware of the serious safety hazard, including injuries and even deaths, from inadvertent and accidental withdrawals of trucks from loading docks and the need for a practical solution since at least as early as 1966 when they sought patent protection on what they called the Panic Stop (DTX-183-8).

63. There was some disagreement between the parties at the trial about the level of ordinary skill in the art in the early 1980's. The Court adopts the definition of plaintiffs' technical expert witness Professor John Strait who stated that the level of skill is relatively low, and that a person with several years of design experience in the steel and machinery art would typify the ordinary skill. A few of the workers in the art, usually managers, might have an engineering degree. With this definition, the Court finds that the claimed combination would not have been obvious to one skilled in the art at the time of the invention.

64. Even if this Court adopts Kelley's definition of the higher level of skill (a qualified engineer) suggested by Kelley's expert witness, Mr. Erlandsson, this Court finds that this invention would have been nonobvious.

65. This finding of nonobviousness is further supported in light of the objective evidence of unobviousness. For example, the '847 patent provided a solution to the long-felt need that escaped the industry, including Kelley, until after Hipp and Hahn made the invention and Rite-Hite began to sell the invention of the '847 patent as the Model MDL-55 vehicle restraint. Before that time, Kelley concentrated its efforts on communications devices and not physical restraints, and even when charged with coming up with physical restraints, it was unable to do so.

66. A further indicium of nonobviousness is copying or imitation by competitors. In this case, Kelley was not able to come up with a solution or a construction for a physical restraint on its own prior to receiving the Rite-Hite MDL-55 literature in the late summer of 1981 and having the MDL-55 installed on the dock of its Tuf-Seal subsidiary on December 30, 1981. Kelley's officers and engineers, within hours after the Rite-Hite installation was completed at Tuf-Seal, were inspecting, operating, photographing, disassembling, and measuring the Rite-Hite MDL-55. Within a few weeks thereafter, the Kelley documentary records show the first evidence of the development of the truck restraint that became the Truk Stop, including a witnessed drawing (PTX 57) and other subsequent indications of the construction of the first prototype, which was made in February of 1982 (PTX 43). Such evidence further supports the argument of unobviousness.

67. As mentioned earlier, while it is never possible to relate commercial success to one specific cause, the invention encompassed by the '847 patent is one significant cause that has resulted in the commercial success of both the MDL-55 of Rite-Hite and the Kelley Truk Stop.

68. Kelley claims that the commercial Rite-Hite product, the MDL-55, also incorporated an improvement over the basic disclosure of the '847 patent. It is, of course, axiomatic in the patent law that one cannot avoid infringement of a basic patent, such as the '847 patent, by making certain improvements on the basic structure, such as the addition of a motor drive or means for providing increased float as compared to the structure of the '847 patent. Similarly, the fact that Rite-Hite's commercial product represents an improvement that came after the basic invention of the '847 patent in no way detracts from the commercial success of the patented structure.

b. *Kelley Has Failed to Prove Anticipation*

69. Kelley has also alleged that the asserted claims are shown by the prior art, although its evidence was vague on whether it alleged an anticipation under any section of 35 U.S.C. § 102. The Court finds that Kelley has failed to carry forth its burden on this allegation.

70. In particular, at the trial, Kelley's technical expert, Mr. Erlandsson, stated that prior art, such as U.S. Patent 621,858 issued to Schwarz for Easel and a 1977 Ford Automobile Jack and operating manual, show the claimed combination in the asserted claims. Yet these prior art devices do not relate to the patented invention. They are far afield and offer no suggestion of an apparatus for restraining a parked vehicle against a stationary upright structure. No single reference introduced by Kelley anticipates the claimed invention. Even if these devices include each of the claimed mechanical elements, their structure, interrelationship, application, and operation vary so drastically and distinctly from the claimed invention that it cannot be found that these devices show the claimed combination.

I. *Kelley's Infringement of the '847 Patent*

71. Infringement of Claims 1, 2, 3, 8, 12, and 13 of the '847 patent by the Kelley vehicle restraint marketed under the trademark "Truk Stop" was proven at trial. To facilitate reading these claims, they were broken down at trial and compared with features and elements of the Kelley device. Rite-Hite's technical expert witness, Professor Strait, explained the relationship at the trial with the assistance of colored charts of the '847 patent drawings (PTX-10) and Kelley's device (PTX-14) as well as demonstrations of various models. In particular, Professor Strait showed how the asserted claims of the '847 patent read on the drawings of the '847 patent (PTX-10 and PTX-10-A), the Model MDL (PTX-19), the Model MDL-55 (PTX-123) (the improved Model MDL, which has met with commercial success in the marketplace through sales of over 1,800 units), and Kelley's Truk Stop device (PTX-21).

72. Claims 1, 2, 3, 8, 12, and 13 of the '847 patent, as asserted against Kelley's product and in the form as relied upon by the plaintiffs at trial in PTX 11, 12, and 13, are as follows:

CLAIM 1

A releasable locking device for securing a parked vehicle to an adjacent relatively stationary upright structure, said device comprising

(a) a first means mountable on an exposed surface of the structure,

(b) a second means mounted on said first means for substantially vertical movement relative thereto between operative and inoperative modes,

(c) the location of said second means when in an inoperative mode being a predetermined distance beneath the location of said second means when in an operative mode and in a non-contacting relation with the vehicle,

(d) and third means for releasably retaining said second means in an operative mode,

(e) said second means including a first section projecting outwardly a predetermined distance from said first means and the exposed surface of the structure, one end of said first section being mounted on said first means for selective independent movement relative thereto along a predetermined substantially vertical path, and a second section extending angularly upwardly from said first section and being spaced outwardly a substantially fixed distance from said first means and the exposed surface of the structure,

(f) said second means, when in an operative mode, being adapted to interlockingly engage a portion of the parked vehicle disposed intermediate to second section and said first means,

(g) said second means, when in an inoperative mode, being adapted to be in a lowered nonlocking relation with the parked vehicle.

CLAIM 2

The device of claim 1 wherein

(a) the first means includes a first member fixedly mountable on the structure exposed surface and a second member slidably mounted on said first member for limited independent substantially vertical relative movement,

(b) said second member being upwardly biased to assume a normal elevated rest position with respect to said first member,

(c) said second member and said second and third means being movable as a unit downwardly from said normal rest position only when a depressive external force exerted on said second means, while the latter is retained in an operative mode, exceeds the biasing force applied to said second member.

CLAIM 3

The device of claim 2 wherein

(a) the third means includes a first element carried by said second means and coacting with a complemental second element carried by the second member of said first means to prevent movement of said second means from an operative mode to an inoperative mode.

CLAIM 8

The device of claim 1 wherein the third means automatically retains the second means in an operative mode.

CLAIM 12

The device of claim 1 wherein

(a) the first means includes elongated upright guide means,

(b) and the first section of the second means includes guide-engaging elements carried on the one end of said first section and continuously maintaining said first section in an outwardly projecting relation with respect to said first means.

CLAIM 13

A releasable locking device for securing a parked vehicle to an adjacent upright structure, said device comprising

(a) a first means having a first member fixedly mountable on the structure and a second member mounted on said first member for limited substantially vertical relative movement, said second member being upwardly biased to assume a normal rest position,

(b) second means mounted on said first means for substantially vertical movement relative thereto between operative and inoperative modes,

(c) the location of said second means when in an inoperative mode being a predetermined distance beneath the location of said second means when in an operative mode,

(d) and third means for releasably retaining said second means in an operative mode,

(e) said third means having a first element carried by the second member of said first means, and a complemental second element carried by said second means, said first and second elements coacting with one another to prevent movement of said second means from an operative mode to an inoperative mode,

(f) said second means including a first section projecting outwardly from said first means, one end of said first section being connected to said first means and being guided thereby for selective relative movement in a predetermined substantially vertical path, and a second sec-

tion extending angularly upwardly from said first section and being spaced outwardly from said first means,

(g) said second means, when in an operative mode, being adapted to interlockingly engage a portion of the parked vehicle disposed intermediate the second section and said first means,

(h) said second means, when in an inoperative mode, being adapted to be in a nonlocking relation with the parked vehicle,

(i) the second member of said first means being movable downwardly from the normal rest position only when a depressive external force exerted on said second means, while the latter is retained in an operative mode, exceeds the biasing force applied to said second member.

73. Upon hearing all of the evidence presented at the trial, including the expert testimony of both Professor Strait (Rite-Hite's technical expert) and Mr. Erlandsson (Kelley's Vice President of Engineering and its technical expert), the Court finds that Claims 1, 2, 3, 8, 12, and 13 of the '847 patent are infringed by Kelley's device.

74. In particular, Professor Strait showed that the Kelley device, which is directed to a releasable locking device or vehicle restraint for securing a parked vehicle to an adjacent upright structure, such as a dockwall, has a frame vertically extending up the dockwall and secured to the exposed surface of the wall, a hook assembly slidably mounted in that frame for vertical movement between an upper operative position where it will secure the vehicle against the wall and a lower inoperative position free of the vehicle so that the vehicle can be driven away from the wall. The hook assembly of the Kelley device also has a horizontal shank portion, a vertical hook portion, and a follower that moves in the frame between the upper operative and lower inoperative positions. The Kelley device also has a means in the form of a rack and pinion which operates with a reversible motor to retain the hook in its upper operative position but to selectively permit the hook to be released to its inoperative position.

75. In addition, at the trial Professor Strait showed that the Truk Stop unit also includes a slide as a part of the fixed frame, which is urged upwardly by a biasing force in the form of a gas spring and has one part of the locking means, namely, the rack secured to it. A coacting complemental part of the retaining means, the pinion, is carried by the hook and engaged the rack to prevent accidental movement of the hook from an operative to an inoperative position. As a result, the Truk Stop will move downward when subject to the force of a truck being loaded providing downward "float." Upward float can also be accommodated by the Truk Stop unit. When the ICC bar moves upward, the motor is activated and the hook moves up with the ICC bar.

76. During Mr. Erlandsson's cross-examination, the following chart (PTX-136) was developed with respect to Claims 1, 2, 3, 8, and 12:

CLAIM PART	KELLEY COLOR	RITE-HITE COLOR	'847 PATENT	TRUK STOP
FIRST MEANS				
First Member	Light Blue	Brown	Frame	Frame
Second Member	Dark Blue	Orange	Slide	Slide
SECOND MEANS	Yellow	Yellow	Hook Assembly	Hook Assembly
THIRD MEANS				
First Element	Dark Red	Green	Pawl	Pinion & Worm
Second Element	Light Red	Purple	Ratchet	Rack
BIASING FORCE	Orange	Blue	Spring	Spring

This chart shows the direct correlation of the '847 patent claim elements and the Truk Stop elements.

77. The Truk Stop device also has a reversible motor that is part of the retaining means. Kelley argued at the trial that its use of a rack and pinion, where the pinion is "driven" up the rack by a motor, avoids infringement of the asserted claims because the third means for releasably retaining the hook in an operative mode as recited in the claims did not cover the Kelley device. Kelley argued further that because a secondary objective of the Rite-Hite patent is to provide a device that does not require an electrical power source to operate, the claims are thereby limited to manual devices. The Court does not find either of Kelley's arguments persuasive.

78. First, the broader claims that are asserted here are not, in any way, limited to a ratchet and pawl. In fact, "means plus function" language is used which is directed to a desired result, i.e., "third means for releasably retaining said second means in an operative mode." During the trial, Kelley's expert witness continued to apply the doctrine of equivalents test with respect to interpreting means plus function language. This is not the proper test. Rather, to interpret these functional claims, reference must be made to the last paragraph of 35 U.S.C. § 112. That paragraph states that the patentee is entitled to a claim covering the means described in the specification and equivalents that perform the stated function. The rack and pinion is interchangeable with a ratchet and pawl and is the clear equivalent of a ratchet and pawl for releasably retaining the hook in its operative position. *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 976 (Fed.Cir.1985). To hold otherwise would nullify § 112. *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574 (Fed.Cir.1985).

79. This finding, with respect to the scope of the "means plus function" language, is buttressed by the fact that other claims in the '847 patent, which are not asserted here, specifically recite a ratchet and pawl. To limit the broader claims, in the way Kelley asked this Court to do, would go against a rational construction of the claims.

80. Furthermore, the claims are not limited to a manual device because only one of

many objectives set forth in the specification is to provide a device that is free of an electrical source. Nonasserted claims specifically recite manual operation, and thus such a limitation cannot be read into the asserted claims.

81. Even without literal infringement, the Court finds that Kelley's device infringes the asserted claims under the doctrine of equivalents. This is so because the Kelley device performs the same function in substantially the same way to achieve substantially the same result as the claimed subject matter of the '847 patent.

82. At the time Kelley undertook the development of its truck restraint, it requested its patent counsel to make a search of all Rite-Hite patents dealing with truck restraints, and Kelley received a written opinion from counsel that all of the Rite-Hite patents then issued were limited to a pivoting hook. Based on this opinion, Kelley proceeded to develop a truck restraint that did not use a pivoting hook in order to avoid conflict with the Rite-Hite patents. The '847 patent did not issue until almost a year after Kelley began to market its Truk Stop truck restraint. Kelley never made an infringement search beyond the six patent numbers that Kelley found listed on the Rite-Hite device's serial number tags. Nor did Kelley ever cause its counsel to make an infringement search to determine what patents might exist or might be infringed by its Truk Stop restraint. Furthermore, Kelley never obtained an opinion from its counsel on the probability or possibility of patents issuing on the MDL-55.

J. *The Unfair Competition Claims and Counterclaims*

83. On March 16, 1984, the Court preliminarily enjoined Kelley from using its Truk-Stop promotional motion picture, that motion picture having been found to be misleading in its depiction of Kelley's and Rite-Hite's truck restraining devices.

84. Based on the testimony of Robert Kuhns that Kelley has taken the original motion picture off the market, has replaced it with a film loop which is acceptable to Rite-Hite, and has no intention of showing or using the original motion picture that this Court found misleading, the Court finds there is no need for any injunctive relief at this time and that the preliminary injunction may be dissolved.

85. At trial, the parties introduced evidence on their respective claims and counterclaims of unfair competition against each other. This evidence failed to establish any need for other injunctive relief or money damages on the part of either party.

II. CONCLUSIONS OF LAW

K. *Source of Applicable Law*

86. This court has jurisdiction over the parties and the subject matter, and venue is proper. The law applicable here is that of the United States Court of Appeals for the Federal Circuit and its predecessor courts, the Court of Customs and Patent Appeals and the Court of Claims. *South Corp. v. United States*, 690 F.2d 1368, 1369, 215 U.S.P.Q. 657 (Fed.Cir.1982).

L. *Validity of Patents*

87. Section 282 of the United States patent laws (35 U.S.C. § 282) explicitly states that a patent shall be presumed valid, and this presumption attaches to each claim independently of the other claims. *Jones v. Hardy*, 727 F.2d 1524, 1528, 220 U.S.P.Q. 1021, 1024 (Fed.Cir.1984). Moreover, this presumption encompasses presumptions of novelty, nonobviousness, and utility—each of which are presumed to be present. *Structural Rubber Products Co. v. Park Rubber Co.*, 749 F.2d 707, 714, 223 U.S.P.Q. 1264, 1269 (Fed.Cir.1984). This statutory presumption of validity places the burden of proving facts establishing invalidity by clear and convincing evidence on the party asserting invalidity. *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 894, 221 U.S.P.Q. 669, 674 (Fed.Cir. 1984), *cert. denied*, — U.S. —, 105 S.Ct. 187, 83 L.Ed.2d 120 (1984).

M. *Nonobviousness*

88. It is a condition of patentability that the invention be nonobvious, 35 U.S.C. § 103. The statutory presumption of patent validity carries with it a presumption of nonobviousness. *Structural Rubber Products Co.*, 749 F.2d at 714.

89. In *Graham v. John Deere & Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 693–94, 15 L.Ed.2d 545, 148 U.S.P.Q. 459, 467 (1966), the Court mandated, in determining obviousness/nonobviousness under § 103 of the patent laws, that factual inquiries be made into: (1) the scope and content of the prior art; (2) the level of ordinary skill in the pertinent art at the time the invention was made; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness, e.g., long-felt needs, commercial success, failure of others, copying, and unexpected results. *Perkin-Elmer Corp.*, 732 F.2d at 894; *Jones*, 727 F.2d at 1527, 1529–31; *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 695–97, 218 U.S.P.Q. 865, 867–69 (Fed.Cir.1983), *cert. denied*, 464 U.S. 1043, 104 S.Ct. 709, 79 L.Ed.2d 173 (1984). The invention of Claims 1, 2, 3, 8, 12, and 13 of the '847 patent would not have been obvious as a whole to a person of ordinary skill in the art in the spring of 1981.

a. *The Invention As a Whole Compared to the Prior Art*

[1] 90. Section 103 requires the consideration of whether the invention would or would not have been obvious "as a whole" to one of ordinary skill in the art to which that subject matter pertains at the time the invention was made. *Perkin-Elmer Corp.*, 732 F.2d at 894; *Jones*, 727 F.2d at 1529. Failure to consider the claimed invention "as a whole" would be an error of law. *W.L. Gore & Associates Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303, 309 (Fed.Cir.1983), *cert. denied*, — U.S. —, 105 S.Ct. 172, 83 L.Ed.2d 107 (1984). In this case, there was no real vehicle restraint art or industry when Rite-Hite introduced its first Dok-Lok restraint. The "art" consisted of the work of Rite-Hite's development team as exemplified in Rite-Hite's earlier patents.

[2] 91. Factors that are considered in determining the level of "ordinary skill in the art" may include: (1) the educational level of one of ordinary skill; (2) the types of problems encountered in the art; (3) the prior art solution to those problems; (4) the rapidity with which innovations are made; and (5) the sophistication of the technology. Not all of these factors need be considered in every case, and often one or more factors may predominate or are given more weight in a particular case. *Environmental Designs*, 713 F.2d at 696–97.

92. Additionally, although it is proper to note the difference existing between the claimed invention and the prior art, because that difference may serve as one element in determining the obviousness/nonobviousness issue, it is improper merely to consider the difference as the invention. The "difference" may appear to be slight, but it can be the key to success and advancement in the art. Furthermore, it is irrelevant in determining obviousness that all or all other aspects of the claimed invention are well known, in a piecemeal manner, in the art, since virtually every patent can be described as a "combination patent" or a "combination" of old elements. *Jones*, 727 F.2d at 1528. There is absolutely no basis in the law for treating combinations of old elements differently in determining patentability. *Fromson*, 755 F.2d at 1555–56.

[3] 93. Moreover, the mere fact that the disclosures or teachings of the prior art can be retrospectively combined for purposes of evaluating the obviousness/nonobviousness issue does not make the combination obvious unless the art also suggested the desirability of the combination or the inventor's beneficial results or the advantage to be derived from combining the teachings. *Fromson*, 755 F.2d at 1556; *In re Sernaker*, 702 F.2d 989, 995–96, 217 U.S.P.Q. 1, 6–7 (Fed.Cir.1983); *In re Imperato*, 486 F.2d 585, 587, 179 U.S.P.Q. 730,

732 (CCPA 1973). There is no such suggestion in this case.

94. In *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Co.*, 730 F.2d 1452, 221 U.S.P.Q. 481 (Fed. Cir.1984), a patent for hydraulic scrap shears was held valid and nonobvious even though it specifically stated in the specification that it disclosed and claimed a combination of features previously used in two separate prior devices. The Court explained:

> Nothing in the references alone or together suggests the claimed invention as a solution to the problem of crushing rigidly massive scrap. There was nothing whatever of record, therefore, to support the district court's statement that the claimed machine possessed "another known procedure operating in a known manner to produce a known result" or its conclusion that Lindemann (the inventor) knew...that a small sidewall ram could most economically process large scrap.

Lindemann, 730 F.2d at 1462.

95. Thus, even if all the elements recited in the claims of the '847 patent were in existence at the time of the invention, the fact remains that the combination of these elements for the purpose as set forth in the claims is nowhere suggested and is a nonobvious advance in the art of vehicle restraints.

b. *The Advance in the Art Provided by the Invention in Suit*

[4] 96. The objective evidence of nonobviousness discussed by the Court in *Graham* may be the most pertinent, cogent, probative, and revealing evidence available to aid in reaching a conclusion on the obviousness/nonobviousness issue and is of substantial significance in this case. *Simmons Fastener Corp. v. Illinois Tool Works, Inc.*, 739 F.2d 1573, 1575–76, 222 U.S.P.Q. 744, 746–47 (Fed.Cir.1984), *cert. denied*, — U.S. —, 105 S.Ct. 2138, 85 L.Ed. 496 (1985). In fact, such evidence of the objective considerations must be considered as part of all the evidence in all cases. *In re Piasecki*, 745 F.2d 1468, 1471, 223 U.S.P.Q. 785 (Fed.Cir.1984). These tests include:

(1) Did the patented invention fulfill a long-felt need in the industry to which it applied? *Ortho Pharmaceutical Corp. v. American Hospital Supply Corp.*, 534 F.2d 89, 93, 190 U.S.P.Q. 397, 400–01 (7th Cir.1976); *Rex Chainbelt, Inc. v. General Kinematics Corp.*, 363 F.2d 336, 337, 150 U.S.P.Q. 319, 320 (7th Cir. 1966).

(2) Did others try and fail to meet the need that the invention ultimately satisfied?

(3) Did the patented invention meet with substantial success upon its introduction to the market? *Rex Chainbelt, Inc.*, 363 F.2d at 337; *Continental Can Co. v. Anchor Hocking Glass Corp.*, 362 F.2d 123, 124, 150 U.S.P.Q. 1, 2 (7th Cir.1966).

(4) Did the accused infringer recognize that the invention was truly meritorious? *AMP, Inc. v. Molex Products Co.*, 329 F.Supp. 1364, 1371, 170 U.S.P.Q. 2, 7 (N.D.Ill.1971).

97. Evidence may often establish that an invention which appeared at first blush to have been obvious was not in view of the secondary considerations. *Fromson*, 755 F.2d at 1556. When a structure such as the '847 patent goes undiscovered for years and then enjoys substantial commercial success, there is strong evidence of unobviousness.

98. One cannot escape the fact that the solutions to dock hazards by preventing vehicle separation eluded the industry for years. Rite-Hite's invention claimed in the '847 patent satisfied a long and widely-felt need, and Rite-Hite succeeded where others, including Kelley prior to copying, had failed. *Atlas Powder Co. v. E.I. DuPont de Nemours & Co.*, 750 F.2d 1569, 1574–76, 224 U.S.P.Q. 409 (Fed.Cir.1984); *Lang v. Prescon Corp.*, 545 F.Supp. 933, 945–46, 217 U.S.P.Q. 839 (D.Del.1982); *Tracor, Inc. v. Hewlett-Packard Co.*, 519 F.2d 1288, 1306, 186 U.S.P.Q. 468 (7th Cir.1975). At the time Rite-Hite's claimed invention was made, no known device accomplished the same results in a similar manner. Rite-Hite's invention, in fact, satisfied this particular need in a unique manner. That is invention. *Jones*, 727 F.2d at 1531.

99. One of the advantages of Rite-Hite's invention is that it uses a simple means to maintain the restraint in the elevated, operative position. The '847 patent discloses a ratchet and pawl as one means to retain the hook in its upper position. But none of the asserted claims recite a ratchet and pawl or even just hook retaining means. Rather, a combination of elements coacting in a novel and unobvious manner are recited. The advantage of the combination went unrecognized for years by the industry, though ratchets and pawls, as well as racks and pinion gears, were well known. This supports the unobviousness of the patent in suit. *Jones*, 727 F.2d at 1530. If anything, Kelley's reliance on earlier devices in the vehicle industry, such as an automobile jack, as well as its own patent for its Panic Stop using ratchet and pawl combinations, shows that no one before Rite-Hite, even with the art before him, ever thought of the combination of the '847 patent.

[5] 100. The imitation of the patented invention by an alleged infringer is strong evidence of what it thinks of the patent in suit and is persuasive of what the rest of the world ought to think. *Anderson Co. v. Sears, Roebuck & Co.*, 165 F.Supp. 611, 623, 119 U.S.P.Q. 236, 244 (N.D.Ill.1958), *modified on other grounds* 265 F.2d 755, 121 U.S.P.Q. 161 (7th Cir.1959). Here, Kelley's failure to develop a vehicle restraint prior to having access to Rite-Hite's vehicle restraint and Kelley's adoption of the vertically moving hook and other elements claimed in the '847 patent provide additional evidence of unobviousness. *Lang*, 545 F.Supp. at 945–46. In fact, Kelley's vehicle restraint, which was identified by Kelley's personnel as "Kelley's version of the Dok-Lok" (PTX-86), was nonexistent until Kelley obtained literature relating to Rite-Hite's vehicle restraint and actually inspected, disassembled, and photographed the Rite-Hite product. *General Monitors, Inc. v. Mine Safety Appliances Co.*, 211 U.S.P.Q. 1126, 1140 (C.D.Cal.1981). Indeed, the imitation and copying by Kelley was strong evidence that Kelley believed that invention lay in the Rite-Hite product. *Ackermans v. General Motors Corp.*, 202 F.2d 642, 645, 96 U.S.P.Q. 281 (4th Cir. 1953), *cert. denied*, 345 U.S. 996, 73 S.Ct. 1139, 97 L.Ed. 1403 (1953).

101. A further indicium of nonobviousness was the evidence that Rite-Hite's invention has also had considerable commercial success. Rite-Hite has sold well over 1,800 MDL-55 restraints falling within the asserted claims of the '847 patent (PTX 81). There is no question that a substantial cause of this commercial success is the claimed configuration. *Fromson*, 755 F.2d at 1556–58; *Magnavox Company v. Chicago Dynamic Industries*, 201 U.S.P.Q. 25, 27 (N.D.Ill.1977).

N. *The Prior Art Does Not Show the Claimed Invention*

[6, 7] 102. To assert that a patent claim is anticipated under 35 U.S.C. § 102, a party must demonstrate identity of invention. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771 (Fed.Cir.1983), *cert. denied*, 465 U.S. 1026, 104 S.Ct. 1284, 79 L.Ed.2d 687 (1984). The determination that a claimed invention is "anticipated" under § 102 is a factual determination. *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 (Fed.Cir.1984).

[8] 103. One who seeks such a finding of anticipation must show that each and every element of the patent claim is found, as arranged in the claim, either expressly described or implicitly described under appropriate principles of inherency, in a *single* prior art reference, or that the claimed invention was previously known or embodied in a single prior art reference, or that the claimed invention was previously known or embodied in a single prior art device or practice. *Lindemann Maschinenfabrik GMBH*, 730 F.2d at 1458. "Unless all of the same elements are found in exactly the same situation and united in the

same way to perform an identical function, there is no anticipation." *National Business Systems, Inc. v. AM International, Inc.*, 546 F.Supp. 340, 350 (N.D.Ill.1982), *aff'd*, 743 F.2d 1227 (7th Cir.1984), *cert. denied*, — U.S. —, 105 S.Ct. 2345, 85 L.Ed.2d 861 (1985).

O. *Kelley's Infringement of the '847 Patent*

[9] 104. The United States patent laws state that whoever without authority makes, uses, or sells any patented invention within the United States during the term of the patent infringes the patent. 35 U.S.C. § 271(a). The patent owner has the burden of proving infringement by a preponderance of the evidence. This burden extends to infringement under the doctrine of equivalents as well as to literal infringement. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1361, 219 U.S.P.Q. 473 (Fed.Cir.1983).

[10, 11] 105. The issue of infringement raises at least two questions: (1) what is patented,[2] and (2) has what is patented been made, used, or sold by another. The first is a question of law; the second is a question of fact. *SSIH Equipment S.A. v. U.S. International Trade Commission*, 718 F.2d 365, 376, 218 U.S.P.Q. 678, 688 (Fed.Cir.1983); *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1569, 219 U.S.P.Q. 1137, 1140 (Fed.Cir.1983). In this case, Rite-Hite obtained a patent claiming a vehicle restraint having a combination of elements performing recited functions. The Truk Stop device, made and sold by Kelley, infringes the asserted claims.

a. *Literal Infringement*

[12] 106. If an allegedly infringing product falls literally within the claim when the words are given their proper meaning, infringement is made out, and that is the end of the inquiry. *Graver Tank and Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 607, 70 S.Ct. 854, 855–56, 94 L.Ed. 1097, 85 U.S.P.Q. 328 (1950).

[13–15] 107. The question of infringement is resolved by comparing the accused device with the claims of the patent, not with the structure described in the patent or the patentee's commercial device. *Martin v. Barber*, 755 F.2d 1564, 1567, 225 U.S.P.Q. 233, 235 (Fed.Cir.1985). The claims of a patent are to be construed in light of the specification, and both are to be read with a view to ascertaining the invention. *United States v. Adams*, 383 U.S. 39, 49, 86 S.Ct. 708, 713, 15 L.Ed.2d 572, 148 U.S.P.Q. 479, 482 (1966). Each claim must be considered as defining a separate invention. *Jones*, 727 F.2d at 1528. In construing or interpreting a claim, a whole host of facts (e.g., patent disclosure, the prosecution history in the Patent and Trademark Office, the prior art and comparison with other claims) may be considered. *Graham*, 383 U.S. at 32–33, 86 S.Ct. at 701; *Fromson*, 720 F.2d at 1569–71.

(1) *"Means Plus Function" Claims*

[16] 108. The independent claims in the '847 patent utilize "means plus function" language. Title 35 U.S.C. § 112 is used to interpret these functional claims and states:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material or acts described in the specification and *equivalents thereof.* [Emphasis added.]

To interpret the statute as limited to a particular means set forth in the specification would be to nullify that provision of § 112. The patentee's claim covers all combinations which utilize as the stated means the structure described in the specification for performing the stated function and also all combinations that utilize any structure which is the equivalent of that described structure insofar as it performs the stated function. *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574 (Fed.Cir.1985). The Court in *Palumbo v. DonJoy Co.*, 762 F.2d 969, 975 (Fed.Cir. May 20, 1985), recognized that a "means plus function" claim is construed "to cover *both* the disclosed structure *and* equivalents thereof" for performing the stated function. The Court in *Palumbo* added that an important factor in the determination of equivalents is whether persons reasonably skilled in the art would know of the interchangeability of an ingredient not contained in the patent with one that was. *Palumbo*, at 977.

[17, 18] 109. In construing such a claim, a number of factors may be considered: (1) the language of the claim, (2) the patent specification, (3) the prosecution history of the patent, (4) other claims in the patent, and (5) expert testimony. Once these factors are weighed, the scope of the "means" claim may be determined, and whether the Kelley device is a § 112 equivalent of the described embodiment is a question of fact. *Palumbo*, at 975–76. Here, looking to the prosecution history of the '847 patent, the amendments to the claims and description following the citation of the Taylor, et al., patent makes it clear that the scope of equivalents for the third means is broad.

[19] 110. In addition, Kelley cannot escape infringement by the mere fact that its Truk Stop restraint is more or less efficient than the subject matter Rite-Hite claimed, or performs additional functions or adds features or is an improvement. *Amstar Corp. v. Envirotech Corp.*, 730 F.2d 1476, 1481–82, 221 U.S.P.Q. 649, 653 (Fed.Cir. 1984), *cert. denied*, — U.S. —, 105 S.Ct. 306, 83 L.Ed.2d 240, 224 U.S.P.Q. 616 (1984); *Radio Steel & Manufacturing Co. v. MTD Products, Inc.*, 731 F.2d 840, 848, 221 U.S.P.Q. 657 (Fed.Cir. 306, 224 U.S. P.Q. 616 (1984); *Radio Steel & Manufacturing Co. v. MTD Products, Inc.*, 731 F.2d 840, 848, 221 U.S.P.Q. 657 (Fed.Cir.1984), *cert. denied*, — U.S. —, 105 S.Ct. 119, 83 L.Ed.2d 62 (1984); *Atlas Powder Co.*, 750 F.2d at 1579–81. Nothing in the claims of Rite-Hite's patent limit the invention to a manual device or one with communications apparatus.

[20] 111. Furthermore, the broader claims asserted here cannot be construed to be limited to a ratchet and pawl as the "third means," or to manual operation. This law is applicable here because Claims 5, 6, and 7 of the '847 patent, which are not asserted, recite that the third means includes a ratchet and pawl, and Claims 4 and 9 recite manual operation. These narrow claim limitations cannot be read into the broader claims to avoid infringement. *D.M.I.*, 755 F.2d at 1574.

b. *Doctrine of Equivalents*

[21, 22] 112. Kelley cannot avoid a finding of infringement by arguing that its device falls outside a literal reading of the claims of the '847 patent. Although the claims of a patent are the measure of the protected invention, the judicially created "doctrine of equivalents" adds latitude and breadth to the application of claim language in order to prevent the infringer from perpetrating "a fraud on a patent." *Graver Tank and Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 608, 70 S.Ct. 854, 856, 94 L.Ed. 1097, 85 U.S.P.Q. 328 (1950). The doctrine of equivalents is designed to protect a patentee, such as Rite-Hite, from an infringer, such as Kelley, who appropriates the invention even if the infringer avoids the literal language of the claims. As such, a finding of infringement is in order here because Kelley's device performs the same function in substantially the same way to achieve substantially the same result as the claimed invention. *Atlas Powder Co.*, 750 F.2d at 1579–81; *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42, 50 S.Ct. 9, 13, 74 L.Ed. 147 (1929); *Graver Tank*, 339 U.S. at 607, 70 S.Ct. at 855–56. Under this doctrine, Rite-Hite's claims are infringed by Kelley's imitation even if Kelley did not precisely clone every literal detail of Rite-Hite's claimed invention.

2. In a patent infringement action, patent claims measure the invention and define the boundaries of patent protection. *Reese v. Elkhart Welding & Boiler Works Inc.*, 447 F.2d 517, 171 U.S.P.Q. 129 (7th Cir.1971).

[23, 24] 113. The range of equivalents to which a patent claim is entitled is on a sliding scale depending on the nature of the invention. *John Zink Co. v. National Airoil Burner Co.*, 613 F.2d 547, 555, 205 U.S.P.Q. 494 (5th Cir.1980); *Julien v. Gomez & Andre Tractor Repairs, Inc.*, 438 F.Supp. 763, 766, 196 U.S.P.Q. 224 (M.D.La. 1977), aff'd, 607 F.2d 1004 (5th Cir.1979). In particular, when a patented invention has had "significant commercial success" or the patent is of the "pioneer type," the patent claims are to be construed liberally and are not to be limited to the identical means and mode of operation shown in the patent. *Graver Tank*, 339 U.S. at 608–09, 70 S.Ct. at 856; *King-Seeley Thermos Co. v. Reynolds Products, Inc.*, 322 F.Supp. 713, 720 (N.D.Ill.1970); *Chicago Patent Corp. v. Genco, Inc.*, 124 F.2d 725, 728 (7th Cir.1941). The broadest protection is given to "a patent covering a function never before performed, a wholly novel device, or one of such novelty and importance as to mark a distinct step in the progress of the art." *Ziegler v. Phillips Petroleum Co.*, 483 F.2d 858, 870, 177 U.S.P.Q. 481 (5th Cir.1973), *cert. denied*, 414 U.S. 1079, 94 S.Ct. 597, 38 L.Ed.2d 485, 180 U.S.P.Q. 1 (1973). The Rite-Hite patent is a pioneer patent because it claims a vehicle restraint that functions in a novel manner, unlike any of the earlier restraints of Rite-Hite or anyone else.

[25, 26] 114. Broad protection is given not only to so-called pioneer patents, but also patents that make a substantial contribution to an existing art and patents that consist of a combination of old ingredients that produce new and useful results. *Graver Tank*, 339 U.S. at 608, 70 S.Ct. at 856; *Julien*, 438 F.Supp. at 766. Accordingly, the claims of a patent are entitled to a range of equivalents commensurate with the scope of the invention. *Ziegler*, 483 F.2d at 869. In this instance, because of the significant advance in the art presented by the Rite-Hite '847 patent and the manifest commercial success, the claims are given the broadest possible interpretation.

[27] 115. In addition, the mere use by Kelley of a component that may be more sophisticated than that disclosed in the specific embodiment of the Rite-Hite patent does *not* allow Kelley to escape an appropriate range of equivalents and thereby avoid infringement of the claimed invention. *Hughes Aircraft Co.*, 717 F.2d at 1365–66; *Atlas Powder Co.*, 750 F.2d at 1579–81; *Bendix Corp. v. United States*, 600 F.2d 1364, 1382, 220 Ct.Cl. 507, 204 U.S.P.Q. 617, 631 (1979).

P. *Rite-Hite's Right to Recover Prejudgment Interest*

[28] 116. In addition to the other relief recoverable for infringement of its patent, the patentee should recover prejudgment interest as provided in 35 U.S.C. § 284 in order to prevent the infringer from having the benefit of the use of the money which it would have been paying in royalties. *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 103 S.Ct. 2058, 76 L.Ed.2d 211 (1983).

[29] 117. The asserted claims of the '847 patent are not invalid and are infringed by Kelley by making and selling the Truk Stop vehicle restraint.

Q. *Multiplied Damages and Attorneys' Fees Are Not Warranted*

118. Under 35 U.S.C. § 284, multiplied damages up to three times the amount found or assessed may be awarded by the Court. Kelley's activities here do not warrant such an award.

119. The activities of Kelley and the circumstances of this case are not sufficiently exceptional to prompt an award of attorneys' fees under 35 U.S.C. § 285.

III. STAY OF EXECUTION

[30] 120. Kelley has moved for a stay of injunction pending appeal. The motion is technically premature because a notice of appeal has not yet been filed, but the Court has the authority to grant a stay conditioned on the movant's filing of a notice of appeal within a specified period.

[31, 32] 121. Under Fed.R.Civ.P. 62(c), the Court may in its discretion suspend a final judgment granting an injunction if the party seeking suspension of the judgment pending appeal can show: (1) that it is likely to prevail on the merits on appeal; (2) that unless a stay is granted it will suffer irreparable injury; (3) that a stay would not substantially harm other parties to the litigation; and (4) that a stay is in the public interest. *Adams v. Walker*, 488 F.2d 1064, 1065 (7th Cir.1973); *Decker v. U.S. Department of Labor*, 485 F.Supp. 837, 844 (E.D.Wis.1980). A showing of absolute probability of success on the merits on appeal need not be made if the injunction would destroy the status quo, irreparably harming the appellant, and granting of the stay will cause only slight harm to the appellee. *Providence Journal Co. v. Federal Bureau of Investigation*, 595 F.2d 889 (1st Cir.1979).

[33] 122. Upon consideration of the foregoing factors and the affidavit of Kelley which has been submitted *in camera*, I conclude that a stay of the injunction without bond should be allowed pending Kelley's appeal.

ORDER

IT IS THEREFORE ORDERED that the defendant Kelley Company, Inc., its officers, employees, agents, and those in privity with them are enjoined from infringing U.S. Patent 4,373,847 by the manufacture or sale of vehicle restraints sold under the trademark Truk Stop and embodying the claimed vehicle restraint pursuant to 35 U.S.C. § 283, and that Kelley is liable to the plaintiffs for damages, including prejudgment interest, as a result of its infringement.

IT IS FURTHER ORDERED that Kelley's motion for a stay of the above-described injunction pending appeal is granted pursuant to Fed.R.Civ.P. 62(c), but further, this stay shall expire within thirty days of the filing date of this decision and order unless a notice of appeal is filed within that period.

Edgar SAUNDERS, Plaintiff,

v.

The STATE OF NEW YORK, the Division of State Police of the State of New York, the County of Rensselaer, the Rensselaer County Sheriff's Department, Eugene Eaton, individually and in his capacity as Sheriff of Rensselaer County, Robert Krogh, individually and in his capacity as Under-Sheriff of Rensselaer County, Emmanuel Ned, individually and in his capacity as an investigator in the Rensselaer County Sheriff's Department, William Pokeda, individually and in his capacity as an investigator in the Rensselaer County Sheriff's Department, Various Employees of the Rensselaer County Sheriff's Department, Who are at this Time, Unknown, individually and in their official capacities as members of the Rensselaer County Sheriff's Department, Richard Crist, individually and in his capacity as an investigator in the Division of State Police of the State of New York, Michael Cryan, individually and in his capacity as an investigator in the Division of State Police of the State of New York, Gerald Looney, individually and in his official capacity as an employee of the Division of State Police of the State of New York and Various Employees of the Division of State Police of the State of New York, individually and in their official and/or supervisorial capacities as employees of the Division of State Police of the State of New York, Defendants.

No. 85–CV–393.

United States District Court, N.D. New York.

March 5, 1986.

Upon a motion to dismiss § 1983 claims arising out of a state criminal case

ant as well as the public interest, the Commission abuses its discretion by declining to release the bond merely because of sales by a respondent of goods known to the complainant at the time of the agreement.

Biocraft also makes other arguments which we need not address.

CONCLUSION

The Commission's denials of Biocraft's requests for return or cancellation of bonds posted pursuant to the Temporary Cease and Desist Order issued January 10, 1990, were an abuse of discretion. Its order is therefore

REVERSED.

In re Mark A. VAECK, Wipa Chungjatupornchai and Lee McIntosh.

No. 91-1120.

United States Court of Appeals, Federal Circuit.

Oct. 21, 1991.

Inventor sought patent for claimed invention directed to use of genetic engineering techniques for production of insecticidal proteins. The United States Patent and Trademark Office Board of Patent Appeals and Interferences affirmed an examiner's rejection of certain claims, and appeal was taken. The Court of Appeals, Rich, Circuit Judge, held that: (1) patent application was improperly rejected on ground of prima facie obviousness, and (2) patent application was properly rejected to extent that claims were too general to enable person skilled in art to make and use claimed invention without undue experimentation.

Affirmed in part, reversed in part.

Mayer, Circuit Judge, dissented and filed opinion.

1. Patents ⇐314(5)

Obviousness of invention for which patent is sought is legal question which court independently reviews, though based upon Patent and Trademark Office's underlying factual findings, which court reviews under clearly erroneous standard. 35 U.S.C.A. § 103.

2. Patents ⇐16(2)

In reviewing rejection of invention for patent as obvious in view of combination of prior art references, court considers whether prior art would have suggested to those of ordinary skill in art that they should make claimed composition or device, or carry out claimed process, and whether prior art would also have revealed that in so making or carrying out, those of ordinary skill would have reasonable expectation of success; both suggestion and reasonable expectation of success must be found in prior art, not in applicant's disclosure. 35 U.S.C.A. § 103.

3. Patents ⇐16.25

Patent application for genetic engineering techniques for production of insecticidal proteins was improperly rejected on ground of prima facie obviousness; prior art did not disclose or suggest expression in cyanobacteria of chimeric gene encoding insecticidally active protein, or convey to those of ordinary skill reasonable expectation of success in doing so. 35 U.S.C.A. § 103.

4. Patents ⇐99

To be patentable, specification of patent must enable any person skilled in art to which it pertains to make and use claimed invention without undue experimentation. 35 U.S.C.A. § 112.

5. Patents ⇐99

Patent application for using genetic engineering techniques to produce insecticidal proteins was properly rejected to extent that claims were too general to enable person skilled in art to make and use claimed invention without undue experimentation; claim referred to use of cyanobacteria in general as host organism, despite fact that cyanobacteria were diverse and relatively poorly studied group of organisms, comprising some 150 different genera, with successful use of any one type in manner called for in invention being unpredictable. 35 U.S.C.A. § 112.

6. Patents ⇐99

Although patent applicants are not required to disclose every species encompassed by their claims, even in unpredictable art, in order to satisfy enablement requirement for patentability, there must be sufficient disclosure, either through illustrative examples or terminology, to teach those of ordinary skill how to make and how to use invention as broadly as it is claimed. 35 U.S.C.A. § 112.

Ian C. McLeod, Ian C. McLeod, P.C., Okemos, Mich., argued for appellant.

Teddy S. Gron, Associate Sol., Office of the Sol., of Arlington, Va., argued for appellee. With him on the brief were Fred E. McKelvey, Sol. and Richard E. Schafer, Associate Sol.

Before RICH, ARCHER, and MAYER, Circuit Judges.

RICH, Circuit Judge.

This appeal is from the September 12, 1990 decision of the Patent and Trademark Office (PTO) Board of Patent Appeals and Interferences (Board), affirming the examiner's rejection of claims 1–48 and 50–52 of application Serial No. 07/021,405, filed March 4, 1987, titled "Hybrid Genes Incorporating a DNA Fragment Containing a Gene Coding for an Insecticidal Protein, Plasmids, Transformed Cyanobacteria Expressing Such Protein and Method for Use as a Biocontrol Agent" as unpatentable under 35 U.S.C. § 103, as well as the rejection of claims 1–48 and 50–51 under 35 U.S.C. § 112, first paragraph, for lack of enablement. We reverse the § 103 rejection. The § 112 rejection is affirmed in part and reversed in part.

BACKGROUND

A. The Invention

The claimed invention is directed to the use of genetic engineering techniques[1] for production of proteins that are toxic to insects such as larvae of mosquitos and black flies. These swamp-dwelling pests are the source of numerous human health problems, including malaria. It is known that certain species of the naturally-occurring *Bacillus* genus of bacteria produce proteins ("endotoxins") that are toxic to these insects. Prior art methods of combatting the insects involved spreading or spraying crystalline spores of the insecticidal *Bacillus* proteins over swamps. The spores were environmentally unstable, however, and would often sink to the bottom of a swamp before being consumed, thus rendering this method prohibitively expensive. Hence the need for a lower-cost method of producing the insecticidal *Bacillus* proteins in high volume, with application in a more stable vehicle.

As described by appellants, the claimed subject matter meets this need by providing for the production of the insecticidal *Bacillus* proteins within host cyanobacteria. Although both cyanobacteria and bacteria are members of the procaryote[2] kingdom, the cyanobacteria (which in the past have been referred to as "blue-green algae") are unique among procaryotes in that the cyanobacteria are capable of oxygenic photosynthesis. The cyanobacteria grow on top of swamps where they are consumed by mosquitos and black flies. Thus, when *Bacillus* proteins are produced with-

1. Basic vocabulary and techniques for gene cloning and expression have been described in *In re O'Farrell*, 853 F.2d 894, 895–99, 7 U.S.P.Q.2d 1673, 1674–77 (Fed.Cir.1988), and are not repeated here.

2. All living cells can be classified into one of two broad groups, procaryotes and eucaryotes. The procaryotes comprise organisms formed of cells that do not have a distinct nucleus; their DNA floats throughout the cellular cytoplasm. In contrast, the cells of eucaryotic organisms such as man, other animals, plants, protozoa, algae and yeast have a distinct nucleus wherein their DNA resides.

in transformed[3] cyanobacterial hosts according to the claimed invention, the presence of the insecticide in the food of the targeted insects advantageously guarantees direct uptake by the insects.

More particularly, the subject matter of the application on appeal includes a chimeric (i.e., hybrid) gene comprising (1) a gene derived from a bacterium of the *Bacillus* genus whose product is an insecticidal protein, united with (2) a DNA promoter effective for expressing[4] the *Bacillus* gene in a host cyanobacterium, so as to produce the desired insecticidal protein.

The claims on appeal are 1–48 and 50–52, all claims remaining in the application. Claim 1 reads:

> 1. A chimeric gene capable of being expressed in Cyanobacteria cells comprising:
>
> (a) a DNA fragment comprising a promoter region which is effective for expression of a DNA fragment in a Cyanobacterium; and
>
> (b) at least one DNA fragment coding for an insecticidally active protein produced by a Bacillus strain, or coding for an insecticidally active truncated form of the above protein or coding for a protein having substantial sequence homology to the active protein,
>
> the DNA fragments being linked so that the gene is expressed.

Claims 2–15, which depend from claim 1, recite preferred *Bacillus* species, promoters, and selectable markers.[5] Independent claim 16 and claims 17–31 which depend therefrom are directed to a hybrid plasmid vector which includes the chimeric gene of claim 1. Claim 32 recites a bacterial strain. Independent claim 33 and claims 34–48 which depend therefrom recite a cyanobacterium which expresses the chimeric gene of claim 1. Claims 50–51 recite an insecticidal composition. Claim 52 recites a particular plasmid that appellants have deposited.

B. Appellants' Disclosure

In addition to describing the claimed invention in generic terms, appellants' specification discloses two particular species of *Bacillus* (*B. thuringiensis, B. sphaericus*) as sources of insecticidal protein; and nine genera of cyanobacteria (*Synechocystis, Anacystis, Synechococcus, Agmenellum, Aphanocapsa, Gloecapsa, Nostoc, Anabaena* and *Fyremyllia*) as useful hosts.

The working examples relevant to the claims on appeal detail the transformation of a single strain of cyanobacteria, i.e., *Synechocystis* 6803. In one example, *Synechocystis* 6803 cells are transformed with a plasmid comprising (1) a gene encoding a particular insecticidal protein ("B.t. 8") from *Bacillus thuringiensis* var. *israelensis*, linked to (2) a particular promoter, the P_L promoter from the bacteriophage Lambda (a virus of *E. coli*). In another example, a different promoter, i.e., the *Synechocystis* 6803 promoter for the rubisco operon, is utilized instead of the Lambda P_L promoter.

C. The Prior Art

A total of eleven prior art references were cited and applied, in various combinations, against the claims on appeal.

The focus of Dzelzkalns,[6] the primary reference cited against all of the rejected claims, is to determine whether chloroplast promoter sequences can function in cyanobacteria. To that end Dzelzkalns discloses the expression in cyanobacteria of a chimeric gene comprising a chloroplast promoter sequence fused to a gene encoding the enzyme chloramphenicol acetyl transferase (CAT).[7] Importantly, Dzelzkalns teaches the use of the CAT gene as a "marker" gene; this use of antibiotic resistance-conferring genes for selection purposes is a common technique in genetic engineering.

Sekar I,[8] Sekar II,[9] and Ganesan [10] collectively disclose expression of genes encoding certain *Bacillus* insecticidal proteins in the bacterial hosts *B. megaterium, B. subtilis* and *E. coli*.

Friedberg [11] discloses the transformation of the cyanobacterium *Anacystis nidulans* R2 by a plasmid vector comprising the O_LP_L operator-promoter region and a temperature-sensitive repressor gene of the bacteriophage Lambda. While the cyanobacteria are attractive organisms for the cloning of genes involved in photosynthesis, Friedberg states, problems may still be encountered such as suboptimal expression of the cloned gene, detrimental effects on cell growth of overexpressed, highly hydrophobic proteins, and rapid turnover of some gene products. To address these problems, Friedberg teaches the use of the disclosed Lambda regulatory signals in plasmid vehicles which, it states, have "considerable potential for use as vectors the expression of which can be controlled in *Anacystis*...."

Miller [12] compares the initiation specificities *in vitro* of DNA-dependent RNA polymerases [13] purified from two different species of cyanobacteria (*Fremyella diplosiphon* and *Anacystis nidulans*), as well as from *E. coli*.

Nierzwicki-Bauer [14] identifies in the cyanobacterium *Anabaena* 7120 the start site for transcription of the gene encoding *rbcL*, the large subunit of the enzyme ribulose–1,5–bisphosphate carboxylase. It reports that the nucleotide sequence 14–8 base pairs preceding the transcription start site "resembles a good *Escherichia coli* promoter," but that the sequence 35 base pairs before the start site does not.

Chauvat [15] discloses host-vector systems for gene cloning in the cyanobacterium *Synechocystis* 6803, in which the antibiotic resistance-conferring *neo* gene is utilized as a selectable marker.

Reiss [16] studies expression in *E. coli* of various proteins formed by fusion of certain foreign DNA sequences with the *neo* gene.

Kolowsky [17] discloses chimeric plasmids designed for transformation of the cyanobacterium *Synechococcus* R2, comprising an antibiotic-resistant gene linked to chromosomal DNA from the *Synechococcus* cyanobacterium.

Barnes, United States Patent No. 4,695,455, is directed to the treatment with stabilizing chemical reagents of pesticides produced by expression of heterologous genes (such as those encoding *Bacillus* proteins) in host microbial cells such as *Pseudomonas* bacteria. The host cells are killed by this treatment, but the resulting pesticidal compositions exhibit prolonged toxic activity when exposed to the environment of target pests.

3. "Transformed" cyanobacteria are those that have successfully taken up the foreign *Bacillus* DNA such that the DNA information has become a permanent part of the host cyanobacteria, to be replicated as new cyanobacteria are generated.

4. "Expression" of a gene refers to the production of the protein which the gene encodes; more specifically, it is the process of transferring information from a gene (which consists of DNA) via messenger RNA to ribosomes where a specific protein is made.

5. In the context of the claimed invention, "selectable markers" or "marker genes" refer to antibiotic-resistance conferring DNA fragments, attached to the gene being expressed, which facilitate the selection of successfully transformed cyanobacteria.

6. 12 *Nucleic Acids Res.* 8917 (1984).

7. Chloramphenicol is an antibiotic; CAT is an enzyme which destroys chloramphenicol and thus imparts resistance thereto.

8. 137 *Biochem. and Biophys. Res. Comm.* 748 (1986).

9. 33 *Gene* 151 (1985).

10. 189 *Mol. Gen. Genet.* 181 (1983).

11. 203 *Mol. Gen. Genet.* 505 (1986).

12. 140 *J. Bacteriology* 246 (1979).

13. RNA polymerase, the enzyme responsible for making RNA from DNA, binds at specific nucleotide sequences (promoters) in front of genes in DNA, and then moves through the gene making an RNA molecule that includes the information contained in the gene. Initiation specificity is the ability of the RNA polymerase to initiate this process specifically at a site(s) on the DNA template.

14. 81 *Proc. Natl. Acad. Sci. USA* 5961 (1984).

15. 204 *Mol. Gen. Genet.* 185 (1986).

16. 30 *Gene* 211 (1984).

17. 27 *Gene* 289 (1984).

D. The Grounds of Rejection

1. The § 103 Rejections

Claims 1–6, 16–21, 33–38, 47–48 and 52 (which include all independent claims in the application) were rejected as unpatentable under 35 U.S.C. § 103 based upon Dzelzkalns in view of Sekar I or Sekar II and Ganesan. The examiner stated that Dzelzkalns discloses a chimeric gene capable of being highly expressed in a cyanobacterium, said gene comprising a promoter region effective for expression in a cyanobacterium operably linked to a structural gene encoding CAT. The examiner acknowledged that the chimeric gene and transformed host of Dzelzkalns differ from the claimed invention in that the former's structural gene encodes CAT rather than insecticidally active protein. However, the examiner pointed out, Sekar I, Sekar II, and Ganesan teach genes encoding insecticidally active proteins produced by *Bacillus*, and the advantages of expressing such genes in heterologous [18] hosts to obtain larger quantities of the protein. The examiner contended that it would have been obvious to one of ordinary skill in the art to substitute the *Bacillus* genes taught by Sekar I, Sekar II, and Ganesan for the CAT gene in the vectors of Dzelzkalns in order to obtain high level expression of the *Bacillus* genes in the transformed cyanobacteria. The examiner further contended that it would have been obvious to use cyanobacteria as heterologous hosts for expression of the claimed genes due to the ability of cyanobacteria to serve as transformed hosts for the expression of heterologous genes. In the absence of evidence to the contrary, the examiner contended, the invention as a whole was prima facie obvious.

Additional rejections were entered against various groups of dependent claims which we need not address here. All additional rejections were made in view of Dzelzkalns in combination with Sekar I, Sekar II, and Ganesan, and further in view of other references discussed in Part C above.

The Board affirmed the § 103 rejections, basically adopting the examiner's Answer as its opinion while adding a few comments. The legal conclusion of obviousness does not require absolute certainty, the Board added, but only a reasonable expectation of success, citing *In re O'Farrell*, 853 F.2d 894, 7 U.S.P.Q.2d 1673 (Fed. Cir.1988). In view of the disclosures of the prior art, the Board concluded, one of ordinary skill in the art would have been motivated by a reasonable expectation of success to make the substitution suggested by the examiner.

2. The § 112 Rejection

The examiner also rejected claims 1–48 and 50–51 under 35 U.S.C. § 112, first paragraph, on the ground that the disclosure was enabling only for claims limited in accordance with the specification as filed. Citing *Manual of Patent Examining Procedure* (MPEP) provisions 706.03(n) [19] and (z) [20] as support, the examiner took the position that undue experimentation would be required of the art worker to practice the claimed invention, in view of the unpredictability in the art, the breadth of the claims, the limited number of working examples and the limited guidance provided in the specification. With respect to unpredictability, the examiner stated that

> [t]he cyanobacteria comprise a large and diverse group of photosynthetic bacteria including large numbers of species in some 150 different genera including *Synechocystis, Anacystis, Synechococcus, Agmenellum, Nostoc, Anabaena,* etc. The molecular biology of these organisms has only recently become the subject of intensive investigation and this work is limited to a few genera. Therefore the level of unpredictability regarding heterologous gene expression in this large, diverse and relatively poorly studied group of procaryotes is high....

The Board affirmed, noting that "the limited guidance in the specification, considered in light of the relatively high degree of unpredictability in this particular art, would not have enabled one having ordinary skill in the art to practice the broad scope of the claimed invention without undue experimentation. *In re Fisher*, 427 F.2d 833, 166 U.S.P.Q. 18 (CCPA 1970)."

18. Denotes different species or organism.

19. MPEP 706.03(n), "Correspondence of Claim and Disclosure," provides in part:
> In chemical cases, a claim may be so broad as to not be supported by [the] disclosure, in which case it is rejected as unwarranted by the disclosure....

20. MPEP 706.03(z), "Undue Breadth," provides in part:
> [I]n applications directed to inventions in arts where the results are unpredictable, the disclosure of a single species usually does not provide an adequate basis to support generic claims. *In re Sol*, 1938 C.D. 723; 497 O.G. 546. This is because in arts such as chemistry it is not obvious from the disclosure of one species, what other species will work. *In re Dreshfield*, 1940 C.D. 351; 518 O.G. 255 gives this general rule: "It is well settled that in cases involving chemicals and chemical compounds, which differ radically in their properties it must appear in an applicant's specification either by the enumeration of a sufficient number of the members of a group or by other appropriate language, that the chemicals or chemical combinations included in the claims are capable of accomplishing the desired result." ...

OPINION

A. *Obviousness*

[1] We first address whether the PTO erred in rejecting the claims on appeal as prima facie obvious within the meaning of 35 U.S.C. § 103. Obviousness is a legal question which this court independently reviews, though based upon underlying factual findings which we review under the clearly erroneous standard. *In re Woodruff*, 919 F.2d 1575, 1577, 16 U.S.P.Q.2d 1934, 1935 (Fed.Cir.1990).

[2] Where claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under § 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. *See In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531 (Fed.Cir.1988). Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure. *Id.*

[3] We agree with appellants that the PTO has not established the prima facie obviousness of the claimed subject matter. The prior art simply does not disclose or suggest the expression in cyanobacteria of a chimeric gene encoding an insecticidally active protein, or convey to those of ordinary skill a reasonable expectation of success in doing so. More particularly, there is no suggestion in Dzelzkalns, the primary reference cited against all claims, of substituting in the disclosed plasmid a structural gene encoding *Bacillus* insecticidal proteins for the CAT gene utilized for selection purposes. The expression of antibiotic resistance-conferring genes in cyanobacteria, without more, does not render obvious the expression of unrelated genes in cyanobacteria for unrelated purposes.

The PTO argues that the substitution of insecticidal *Bacillus* genes for CAT marker genes in cyanobacteria is suggested by the secondary references Sekar I, Sekar II, and Ganesan, which collectively disclose expression of genes encoding *Bacillus* insecticidal proteins in two species of host *Bacillus* bacteria (*B. megaterium* and *B. subtilis*) as well as in the bacterium *E. coli*. While these references disclose expression of *Bacillus* genes encoding insecticidal proteins in certain transformed *bacterial* hosts, nowhere do these references disclose or suggest expression of such genes in transformed *cyanobacterial* hosts.

To remedy this deficiency, the PTO emphasizes similarity between bacteria and cyanobacteria, namely, that these are both procaryotic organisms, and argues that this fact would suggest to those of ordinary skill the use of cyanobacteria as hosts for expression of the claimed chimeric genes. While it is true that bacteria and cyanobacteria are now both classified as procaryotes, that fact alone is not sufficient to motivate the art worker as the PTO con-

tends. As the PTO concedes, cyanobacteria and bacteria are not identical; they are classified as two separate divisions of the kingdom Procaryotae.[21] Moreover, it is only in recent years that the biology of cyanobacteria has been clarified, as evidenced by references in the prior art to "blue-green algae." Such evidence of recent uncertainty regarding the biology of cyanobacteria tends to rebut, rather than support, the PTO's position that one would consider the cyanobacteria effectively interchangeable with bacteria as hosts for expression of the claimed gene.

At oral argument the PTO referred to additional secondary references, not cited against any independent claim (i.e., Friedberg, Miller, and Nierzwicki-Bauer), which it contended disclose certain amino acid sequence homology between bacteria and cyanobacteria. The PTO argued that such homology is a further suggestion to one of ordinary skill to attempt the claimed invention. We disagree. As with the Dzelzkalns, Sekar I, Sekar II, and Ganesan references discussed above, none of these additional references disclose or suggest that cyanobacteria could serve as hosts for expression of genes encoding *Bacillus* insecticidal proteins. In fact, these additional references suggest as much about *differences* between cyanobacteria and bacteria as they do about similarities. For example, Nierzwicki-Bauer reports that a certain nucleotide sequence (i.e., the -10 consensus sequence) in a particular cyanobacterium resembles an *E. coli* promoter, but that another nearby nucleotide sequence (the -35 region) does not. While Miller speaks of certain promoters of the bacteriophage Lambda that are recognized by both cyanobacterial and *E. coli* RNA polymerases, it also discloses that these promoters exhibited differing strengths when exposed to the different polymerases. Differing sensitivities of the respective polymerases to an inhibitor are also disclosed, suggesting differences in the structures of the initiation complexes.

The PTO asks us to agree that the prior art would lead those of ordinary skill to conclude that cyanobacteria are attractive hosts for expression of any and all heterologous genes. Again, we can not. The relevant prior art does indicate that cyanobacteria are attractive hosts for expression of both native and heterologous *genes involved in photosynthesis* (not surprisingly, for the capability of undergoing oxygenic photosynthesis is what makes the cyanobacteria unique among procaryotes). However, these references do not suggest that cyanobacteria would be equally attractive hosts for expression of *unrelated* heterologous genes, such as the claimed genes encoding *Bacillus* insecticidal proteins.

In *O'Farrell*, this court affirmed an obviousness rejection of a claim to a method for producing a "predetermined protein in a stable form" in a transformed bacterial host. 853 F.2d at 895, 7 U.S.P.Q.2d at 1674. The cited references included a prior art publication (the Polisky reference) whose three authors included two of the three coinventor-appellants. The main difference between the prior art and the claim at issue was that in Polisky, the heterologous gene was a gene for ribosomal RNA, while the claimed invention substituted a gene coding for a predetermined protein. *Id.* at 901, 7 U.S.P.Q.2d at 1679. Although, as the appellants therein pointed out, the ribosomal RNA gene is not normally translated into protein, Polisky mentioned preliminary evidence that the transcript of the ribosomal RNA gene was translated into protein, and further predicted that if a gene coding for a protein were to be substituted, extensive translation might result. *Id.* We thus affirmed, explaining that

> the prior art explicitly suggested the substitution that is the difference between the claimed invention and the prior art, and presented preliminary evidence suggesting that the [claimed] method could be used to make proteins.
>
> ....
>
> ... Polisky contained detailed enabling methodology for practicing the claimed invention, a suggestion to modify the prior art to practice the claimed invention, and evidence suggesting that it would be successful.

Id. at 901–02, 7 U.S.P.Q.2d at 1679–80.

In contrast with the situation in *O'Farrell*, the prior art in this case offers no suggestion, explicit or implicit, of the substitution that is the difference between the claimed invention and the prior art. Moreover, the "reasonable expectation of success" that was present in *O'Farrell* is not present here. Accordingly, we reverse the § 103 rejections.

B. Enablement

[4] The first paragraph of 35 U.S.C. § 112 requires, *inter alia*, that the specification of a patent enable any person skilled in the art to which it pertains to make and use the claimed invention. Although the statute does not say so, enablement requires that the specification teach those in the art to make and use the invention without "undue experimentation." *In re Wands*, 858 F.2d 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed.Cir.1988). That *some* experimentation may be required is not fatal; the issue is whether the amount of experimentation required is "undue." *Id.* at 736–37, 8 U.S.P.Q.2d at 1404. Enablement, like obviousness, is a question of law which we independently review, although based upon underlying factual findings which we review for clear error. *See id.* at 735, 8 U.S.P.Q.2d at 1402.

[5] In response to the § 112 rejection, appellants assert that their invention is "pioneering," and that this should entitle them to claims of broad scope. Narrower claims would provide no real protection, appellants argue, because the level of skill in this art is so high, art workers could easily avoid the claims. Given the disclosure in their specification, appellants contend that any skilled microbiologist could construct vectors and transform many different cyanobacteria, using a variety of promoters and *Bacillus* DNA, and could easily determine whether or not the active *Bacillus* protein was successfully expressed by the cyanobacteria.

The PTO made no finding on whether the claimed invention is indeed "pioneering," and we need not address the issue here. With the exception of claims 47 and 48, the claims rejected under § 112 are not limited to any particular genus or species of cyanobacteria. The PTO's position is that the cyanobacteria are a diverse and relatively poorly studied group of organisms, comprising some 150 different genera, and that heterologous gene expression in cyanobacteria is "unpredictable." Appellants have not effectively disputed these assertions. Moreover, we note that only one particular species of cyanobacteria is employed in the working examples of appellants' specification, and only nine genera of cyanobacteria are mentioned in the entire document.

Taking into account the relatively incomplete understanding of the biology of cyanobacteria as of appellants' filing date, as well as the limited disclosure by appellants of particular cyanobacterial genera operative in the claimed invention, we are not persuaded that the PTO erred in rejecting claims 1–46 and 50–51 under § 112, first paragraph. There is no reasonable correlation between the narrow disclosure in appellants' specification and the broad scope of protection sought in the claims encompassing gene expression in any and all cyanobacteria. *See In re Fisher*, 427 F.2d 833, 839, 166 U.S.P.Q. 18, 24 (CCPA 1970) (the first paragraph of § 112 requires that the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification).[22] Accordingly,

21. *Stedman's Medical Dictionary* 1139 (24th ed. 1982) (definition of "Procaryotae"). Procaryotic organisms are commonly classified according to the following taxonomic hierarchy: Kingdom; Division; Class; Order; Family; Genus; Species. 3 *Bergey's Manual of Systematic Bacteriology* 1601 (1989).

22. The enablement rejection in this case was not based upon a post-filing date state of the art, as in *In re Hogan*, 559 F.2d 595, 605–07, 194 U.S.P.Q. 527, 536–38 (CCPA 1977). *See also United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251, 9 U.S.P.Q.2d 1461, 1464 (Fed.Cir.1989) (citing *Hogan*); *Hormone Research Found., Inc. v. Genentech, Inc.*, 904 F.2d 1558, 1568–69, 15 U.S.P.Q.2d 1039, 1047–48 (Fed.Cir.1990) (directing district court, on remand, to consider effect of *Hogan* and *United States Steel* on the enablement analysis of *Fisher*), *cert. dismissed*, — U.S. —, 111 S.Ct. 1434, 113 L.Ed.2d 485 (1991). We therefore do not

we affirm the § 112 rejection as to those claims.

[6] In so doing we do *not* imply that patent applicants in art areas currently denominated as "unpredictable" must never be allowed generic claims encompassing more than the particular species disclosed in their specification. It is well settled that patent applicants are not required to disclose every species encompassed by their claims, even in an unpredictable art. *In re Angstadt*, 537 F.2d 498, 502–03, 190 U.S.P.Q. 214, 218 (CCPA 1976). However, there must be sufficient disclosure, either through illustrative examples or terminology,[23] to teach those of ordinary skill how to make and how to use the invention as broadly as it is claimed. This means that the disclosure must adequately guide the art worker to determine, without undue experimentation, which species among all those encompassed by the claimed genus possess the disclosed utility. Where, as here, a claimed genus represents a diverse and relatively poorly understood group of microorganisms, the required level of disclosure will be greater than, for example, the disclosure of an invention involving a "predictable" factor such as a mechanical or electrical element. *See Fisher*, 427 F.2d at 839, 166 U.S.P.Q. at 24. In this case, we agree with the PTO that appellants' limited disclosure does not enable one of ordinary skill to make and use the invention as now recited in claims 1–46 and 50–51 without undue experimentation.

Remaining dependent claim 47 recites a cyanobacterium which expresses the chimeric gene of claim 1, wherein the cyanobacterium is selected from among the genera *Anacystis* and *Synechocystis*. Claim 48, which depends from claim 47, is limited to the cyanobacterium *Synechocystis* 6803. The PTO did not separately address these claims, nor indicate why they should be treated in the same manner as the claims encompassing all types of cyanobacteria. Although these claims are not limited to expression of genes encoding particular *Bacillus* proteins, we note what appears to be an extensive understanding in the prior art of the numerous *Bacillus* proteins having toxicity to various insects. The rejection of claims 47–48 under § 112 will not be sustained.

CONCLUSION

The rejection of claims 1–48 and 50–52 under 35 U.S.C. § 103 is *reversed*. The rejection of claims 1–46 and 50–51 under 35 U.S.C. § 112, first paragraph, is *affirmed* and the rejection of claims 47 and 48 thereunder is *reversed*.

AFFIRMED-IN-PART, REVERSED-IN-PART.

MAYER, Circuit Judge, dissenting.

An appeal is not a second opportunity to try a case or prosecute a patent application, and we should not allow parties to "undertake to retry the entire case on appeal." *Perini America, Inc. v. Paper Converting Machine Co.*, 832 F.2d 581, 584, 4 U.S.P.Q.2d 1621, 1624 (Fed.Cir.1987); *Eaton Corp. v. Appliance Valves Corp.*, 790 F.2d 874, 877, 229 U.S.P.Q. 668, 671 (Fed. Cir.1986). But that is precisely what the court has permitted here. The PTO conducted a thorough examination of the prior art surrounding this patent application and concluded the claims would have been obvious. The board's decision based on the examiner's answer which comprehensively explains the rejection is persuasive and shows how the evidence supports the legal conclusion that the claims would have been obvious. Yet, the court ignores all this and conducts its own examination, if you will, as though the examiner and board did not exist. Even if I thought this opinion were more persuasive than the board's, I could not join it because it misperceives the role of the court.

The scope and content of the prior art, the similarity between the prior art and the claims, the level of ordinary skill in the art, and what the prior art teaches are all questions of fact. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 693–94, 15 L.Ed.2d 545, 148 U.S.P.Q. 459, 467 (1966); *Jurgens v. McKasy*, 927 F.2d 1552, 1560, 18 U.S.P.Q.2d 1031, 1037 (Fed.Cir.1991). And "[w]here there are two permissible views of the evidence, the factfinder's choice between them cannot be clearly erroneous." *Anderson v. City of Bessemer City*, 470 U.S. 564, 574, 105 S.Ct. 1504, 1511–12, 84 L.Ed.2d 518 (1985). The mere denomination of obviousness as a question of law does not give the court license to decide the factual matters afresh and ignore the requirement that they be respected unless clearly erroneous. *In re Woodruff*, 919 F.2d 1575, 1577, 16 U.S.P.Q.2d 1934, 1935 (Fed.Cir.1990); *In re Kulling*, 897 F.2d 1147, 1149, 14 U.S.P.Q.2d 1056, 1057 (Fed. Cir.1990). There may be more than one way to look at the prior art, but on this record we are bound by the PTO's interpretation of the evidence because it is not clearly erroneous and its conclusion is unassailable. I would affirm on that basis.

consider the effect of *Hogan* and its progeny on *Fisher's* analysis of when an inventor should be allowed to "dominate the future patentable inventions of others." *Fisher*, 427 F.2d at 839, 166 U.S.P.Q. at 24.

23. The first paragraph of § 112 requires nothing more than *objective* enablement. *In re Marzocchi*, 439 F.2d 220, 223, 169 U.S.P.Q. 367, 369 (CCPA 1971). How such a teaching is set forth, either by the use of illustrative examples or by broad terminology, is irrelevant. *Id.*

LEVERNIER CONSTRUCTION, INC., Plaintiff-Appellee,

v.

The UNITED STATES, Defendant-Appellant.

No. 91-5058.

United States Court of Appeals, Federal Circuit.

Oct. 22, 1991.

Construction contractor sought attorney fees and expenses under the Equal Access to Justice Act (EAJA) after settlement of equitable adjustment claim. On original hearing, the Claims Court, Reginald W. Gibson, J., 21 Cl.Ct. 683, granted application in part and denied it in part. Contractor sought reconsideration. The Claims Court, 22 Cl.Ct. 247, granted the motion, and held that contractor was entitled to recover additional amount representing consultant fees and expenses. Government appealed. The Court of Appeals, Bennett, Senior Circuit Judge, held that: (1) prosecution of equitable adjustment claim before contracting officer was not a "civil action" within meaning of the EAJA, and thus contractor was not entitled to recover consultant fees incurred in preparation of equitable adjustment claim; (2) Claims Court erred in applying 18% cost of living adjustment (COLA) to paralegal fees awarded under the EAJA; and (3) it was error to apply 18% (COLA) to hourly rates of attorneys whose time was claimed at $75 an hour.

Reversed.

1. United States ⇐147(12)

Prosecution of equitable adjustment claim before contracting officer was not "civil action" within meaning of the Equal Access to Justice Act (EAJA), and thus contractor was not entitled to recover fees incurred by contract claim consultant for preparation of equitable adjustment claim. 28 U.S.C.A. § 2412.

See publication Words and Phrases for other judicial constructions and definitions.

2. United States ⇐147(5)

Equal Access to Justice Act (EAJA) is a waiver of sovereign immunity which must be strictly construed. 28 U.S.C.A. § 2412.

3. United States ⇐147(4)

In formulating an award of attorney fees under the Equal Access to Justice Act (EAJA), court may adjust statutory cap governing rate of attorney fees upward to account for an increase in cost of living. 28 U.S.C.A. § 2412(d)(2)(A)(ii).